

**To explore the holistic behaviour of the UK  
Intellectual Property Office using the  
Complex Adaptive System paradigm**

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## Abstract

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The aim of this research is to explore the holistic behaviour of the UK Intellectual Property Office, using the complex adaptive system paradigm. The study contributes to knowledge and practice through the refinement of the complexity strategy matrix, which portrays organisations as degrees of mechanistic and emergent behaviour. Consequently this understanding of organisational behaviour will assist organisations to change and respond to the environment. This is considered important, because traditional strategic management literature from its militaristic roots, through to the managerial and mechanistic conception as a process of planning, deliberate design and positioning to exploit markets, might understandably give the impression to external observers, that it is a discourse dominated by rational economic thought. However the last twenty five years has seen the emergence of the chaos and complexity schools of thought, which have explored the notions that organisations are complex adaptive systems existing in changing environments. This paradigm places the premium on the importance of organizational linkages with its environment, so that the organization can remain appropriately sensitive to changes. This context is real for the Intellectual Property Office, since the Intellectual Property environment is undergoing significant change. The data collection methods used to meet the aim and objectives of the study, involve the use of primary semi structured interviews which were complimented with secondary archival data. These data collection methods were considered as the most appropriate, as a means to interpret and understand the behaviour of the agents of the system, and place the findings within the general context of a case study. The findings show that whilst the IPO predominately show behaviours associated with the traditional management literature, through the abundance of control, top down decision making, and planning; the findings also indicate degrees of divergent behaviour which are associated with emergent and adaptable behaviour.

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# List of Acronyms

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**BIS:** Business Innovation & Skills

**CAS:** Complex adaptive system

**EPO:** European Patent Office

**IP:** Intellectual Property

**IPO:** Intellectual Property Office

**IPOB:** Intellectual property Office Board

**IPR:** Intellectual Property Rights

**OHIM:** The Office of Harmonization and Internal Market

**TRIPS:** Trade Related Aspects of Intellectual Property

**USPTO:** United States Patent Office

**VERS:** Voluntary Early Release Scheme redundancy programme

**WIPO:** The World Intellectual Property Office

## Glossary of Terms

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**Chaos:** *Aperiodic bounded dynamics in a deterministic system with sensitive dependence on initial conditions* (Kaplan & Glass, 1995): Stochastic behaviour occurring in a deterministic system (Stewart, 1989).

**Co – Evolution:** The living system within a network of other interacting living systems (Stacey, 2000), in which the dynamics between them is viewed as constantly changing in a non-linear fashion, with both competition and co-operation working simultaneously, leading to not just evolution but also co-evolution (Seel, 1999; Mitleton-Kelly, 2004).

**Complex Adaptive System** *as a dynamic network of agents acting in parallel, constantly reacting to what the other agents are doing, which in turn influences behaviour and the network as a whole* (Holland, 1998).

**Complex Adaptive System Paradigm:** A way of thinking of an organisation *as a dynamic network of agents acting in parallel, constantly reacting to what the other agents are doing, which in turn influences behaviour and the network as a whole* (Holland, 1998).

**Complexity:** A whole comprehending in its compass a number of parts, (in later use) of interconnected parts or involved particulars; a complex or complicated whole (OED, 1989a); A set of both complicated and simple problems that are not reducible (Glouberman et. al., 2002; Goodwin, 1994).

**Complexity Theory:** *The study of the behaviour of macroscopic collections of such units that are endowed the potential to evolve over time* (Covney & Highfield, 1995). Complexity refers to the condition of the universe which is integrated and yet too rich and varied for us to understand in simple common mechanistic or linear ways. We can understand many parts of the universe in these ways but the larger and more intricately related phenomena can only be understood by principles and patterns – not in detail. Complexity deals with

the nature of emergence, innovation, learning and adaptation (Santa Fe Group, 1996).

**Complicated:** Folded together; Tangled; Consisting of an intimate combination of parts or elements not easy to unravel or separate; involved intricate, confused; Complex. Compound: the opposite of simple (OED, 1989); *A collection of simple problems which can be dealt with independently of each other* (Glouberman & Zimmerman, 2002).

**Connectivity:** An essential part of the complex adaptive system behaviour, is the notion that such systems exist in changing environments, and as such the underlying premise, is that such systems exist in symbiosis with the environment (Brooks, 2005). In this context, how the agents in the system connect, and relate to one another and form connections with the environment, is viewed as critical, to the system's ability to respond to the environment (Peltoniemi, 2005).

**Control:** *the management approach that attempts to guide the organisation towards certain objectives, within certain limits of a standard or plan through the use of feedback.*

**Edge of Chaos:** *'When productive agitation runs high, innovation often thrives and startling breakthroughs can come about. This elusive much-sought after sweet spot is sometimes called a "burning platform". The living sciences call it the edge of chaos'* (Pascale et al., 2000).

**Effective:** A measure of complexity that focuses on the AIC of the regularities of an entity, as opposed to its incidental features (Gel-Mann, 1996).

**Emergence:** is considered a property, which arises out of the need of the whole of the system, to respond to the changes in the environment (Peltoniemi, 2005).

**Far from (or beyond) Equilibrium:** Complex adaptive system theory is interested in the “far from equilibrium” conditions that foster emergence. The amplification of random events is a key reason for the emergence to possess unpredictable features (Goldstein, 1999).

**Feedback:** *a process by which information generated by an action is used for the decision-making or regulation process, to affect the next action* (Stacey, 1996a).

**Fitness Landscape:** refers to the organisation taking a snap shot of the environment in which it sits at any given time (Kaufmann and Levin 1987), where “Fitness” may be interpreted as the ability to gain competitive advantage (Merry, 1999, Murmann, 2003).

**Learning Organisation:** *An organisation which engages in the collective learning to allow the organisation to adapt to the rapidly changing circumstances in the environment* (Cooksey, 2002).

**Living System:** A system [complex system], that interacts with its environment, and exchanges goods and services and resources with it. The elements within are not identical and they may learn and evolve with time (Boulton and Allen, 2004).

**Mechanical System:** A perspective of an organisation through the lens from *a rational, deterministic world view derived initially from the physics of Newton* (Boulton and Allen, 2004).

**Non-Linear:** *involving terms of an equation that are not of the first degree; involving or processing the property that the magnitude of an effect or output is not linearly related to that of the cause or input* (OED, 1989d); the behaviour of systems when effects are not proportional to causes.

**Non-Linearity:** *The property of not being linear; lack of proportionality between two related quantities* (as input and output). (OED, 1989d).

**Plan:** To make a plan of (something existing, esp. a piece of ground or a building); to delineate upon or by means of a plan; to plot down, lay down (OED, 1989e); *To devise, contrive, design (something to be done, or some action or proceeding to be carried out); to scheme, project, arrange beforehand* (OED, 1989e).

**Planning:** The action of the verb plan; the action or work of a planner; the forming of plans; the making or delineation of a plan or diagram; scheming, designing, contriving (OED, 1989e); *An attempt to deal with a situation when “it is believed that unless something is done, a desirable future is not likely to occur; and that if appropriate action is taken, the likelihood of such a future can be increased* (Ackoff, 1981); A range of approaches intended to deal with the future of the organisation.

**Organisational:** *refers to the perceived variety of entities, relationships, rules and behaviour that an organisation can exhibit* (Cooksey, 2002).

**Rational:** A strategy concerned with deliberately designing structures and plans to match the internal state of the organisation to that of the external environment (Selznick, 1957; Chandler, 1962).

**Requisite variety:** In order for a system to remain viable, a system needs to generate the same degree of internal complexity, as the external complexity it faces in the environment (Ashby, 1956).

**Self-organisation:** *The spontaneous formation of interest groups and coalitions around specific issues, communication about those issues, cooperation and the formation of consensus on and a commitment to a response to those issues* (Stacey, 1993).

**Simplification:** *A strategy concerned with the removal of the sources of complexity and waste in organisations* (Gregory and Rawling, 1997); The action or process of simplifying or rendering less complex or elaborate; the result of this (OED, 1989f).



**Tipping Point:** The propensity of a system, to behave for a length of time in a predictable linear fashion, and then 'tip', due to some slight cause (Gladwell, 2000).

**Uncertainty:** *Uncertainty refers to the perceived variety of states in the environment, the perceived degree of change and the amount of knowledge about these states for a particular system;* The quality of being uncertain in respect of duration, continuance, occurrence, etc; liability to chance or accident. Also the quality of being indeterminate as to magnitude or value; the amount of variation in a numerical result that is consistent with observation (OED, 1989b); The average number of binary decisions a decision maker has to make in order to select one out of mutually exclusive alternatives, a measure of an observer's ignorance or lack of information (Klippendorff, 1986).

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# 1.0 Introduction

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This chapter provides the aim and objectives of the study, and as such introduces the context in which the research will be carried out. The chapter also introduces the research process for the study, in which an overview of the design of the study is outlined.

## 1.1 Background to the research

The subject of the Complex Adaptive System (CAS) paradigm within organisations' has been widely debated and various commentators have presented radically different views.

Some commentators support the notion that organisations' are synonymous to large machines or mechanical systems (Morgan, 1997), in which the underlying assumption is that organisations' can deliberately design structures and plans, to match their internal states to that of the external environment, and therefore control the implementation of strategy (Selznick, 1957; Chandler, 1962). To reinforce this paradigm some authors support the notion that complexity is harmful to organisations' and thereby should be avoided (Shomberger, 1982; 1986; Rommel et al., 1995; Jensen, 2000); and others argue that complexity is inherent in organisations' but that it can be planned for and controlled (Beer, 1984; Frizelle and Woodcock, 1995). At the heart of this paradigm, the environment in which the organisation exists, is considered knowable and stable and where the future is considered to bear a close association to the past, in which the behaviour of competitors and customers are considered rational and unchanging (Ansoff, 1965; Learned et al., 1965; Porter, 1980).

In contrast some commentators and practitioners support the notion that organisations' are complex adaptive systems existing in changing environments (Nonaka, 1988; Stacey, 1993, 1996, 2000; Pascale et al., 2000). This paradigm has been reflected through numerous studies which places the premium on organisational linkages with the environment, so that

the organisation can remain appropriately sensitive and thereby respond to such changes, through what is described as non linear and emergent behaviour (Gell-Mann, 1994; Holland, 1998; Brooks, 2005). To reinforce this paradigm, commentators support the proposition that complexity is an essential element for the evolution and sustainability of organisations', in that it cannot be controlled, but only managed within certain boundaries (Kauffman, 1995a, 1995b; McCarthy et al., 2000).

In response to the mechanistic conception of the organisation (Brooks, 2005), academics and practitioners have looked for different approaches from the closed and ordered systems, to what is considered as the messy and open system approach, through the science of complexity (Begun et al., 2003). This has resulted in numerous studies ranging from Healthcare organisations' (Plesk and Wilson, 2001; Redfern and Christian, 2003); management topics such as Change Management (Beeson and Davis, 2000; McMillan, 2005), Digital social networks as CAS (Hasgall, 2013); Supply chain networks theory (Hearnshaw and Wilson, 2013); Team creativity (Cirella et al., 2014); Management of integrated care (Edgren and Barnard, 2012). These studies reflect the recognition that organisations', as well as networks have more in common with living organisms than machines, in which CAS thinking emphasises connections and relationships between all parts of the organisation and the environment in which they sit.

From the contextual aspect of this study, previous studies indicate that the CAS theory has focused on a number of different aspects of the IP system, which include Intellectual Property Rights (Harper, 2014); Complex adaptive innovation systems (Cooke, 2012); Intellectual Copyright system (Tussey, 2013); Pricing of copyrighted information goods (Khouja et al., 2008); Strategic legal and business behaviour as a form of regulation (Matwyszyn, 2006); Innovation (Tilebein, 2006); Technology as a complex adaptive system: evidence from patent data (Fleming and Sorenson, 2001); and Managing distributed innovation in turbulent markets (Sawhney and Prandelli, 2000). In contrast this studies focus is the behaviour of the UK Intellectual Property granting organisation as a complex adaptive system.

## **1.2 Research framework**

The research framework for this study is the complex adaptive system paradigm, and therefore the following section will provide a brief outline of what a complex adaptive system is, and the framework in which these systems exist.

### **1.2.1 What is a complex adaptive system?**

Whilst there are many definitions banded around, for the purpose of this research a complex adaptive system is considered to be a system, which is composed of a diversity of agents that interact with each other, mutually affect each other, and in doing so generate behaviour for the system as a whole (Holland, 1998; Harkema, 2003). Common examples that are often quoted include a shoal of fish or a flock of birds. They consist of individual agents, perhaps hundreds or even thousands who are considered to be following simple rules as a means to adapt to the movement of neighbours, so as to fly or swim in a formation without crashing into each other (Stacey, 2007).

A key question often asked, is how do these complex nonlinear systems with their vast amount of interacting agents function, so as to produce orderly patterns of behaviour?

The complex adaptive literature argues that commentators and practitioners do not look for what may be considered as an overall blueprint for the system, but are interested in the interaction between the individual agents of the system, in which each agent of the system is considered as behaving according to its own local principles of interaction (Harkema, 2003; Stacey, 2007). This interaction is considered local, since the individual agents are considered to interact only with a small proportion of the total population, and as such not considered as following centrally determined rules of interaction. Thus the way the agents interact and the strategies they pursue, lead to what is considered as non linear dynamic behaviour, in which the patterns of behaviour of the system are not considered constant; because when the environment changes, the behaviour of the system as a whole constantly



adapts to the conditions and changes around it (Harkema, 2003; Stacey, 2007).

For the organisation the agents of the system are the individuals and the teams that make up the organisation and as such their cognitive schemes may be described as the principles, models, rules and behaviour of the system (Harkema, 2003). One example which depicts the contextual complexity of organisational activities by virtue of the variety of interactions through the relationships, rules and behaviours that are conveyed when viewing the organisation through the CAS paradigm, is shown through Cooksey (2003) “Learnership” model (figure 1.1).

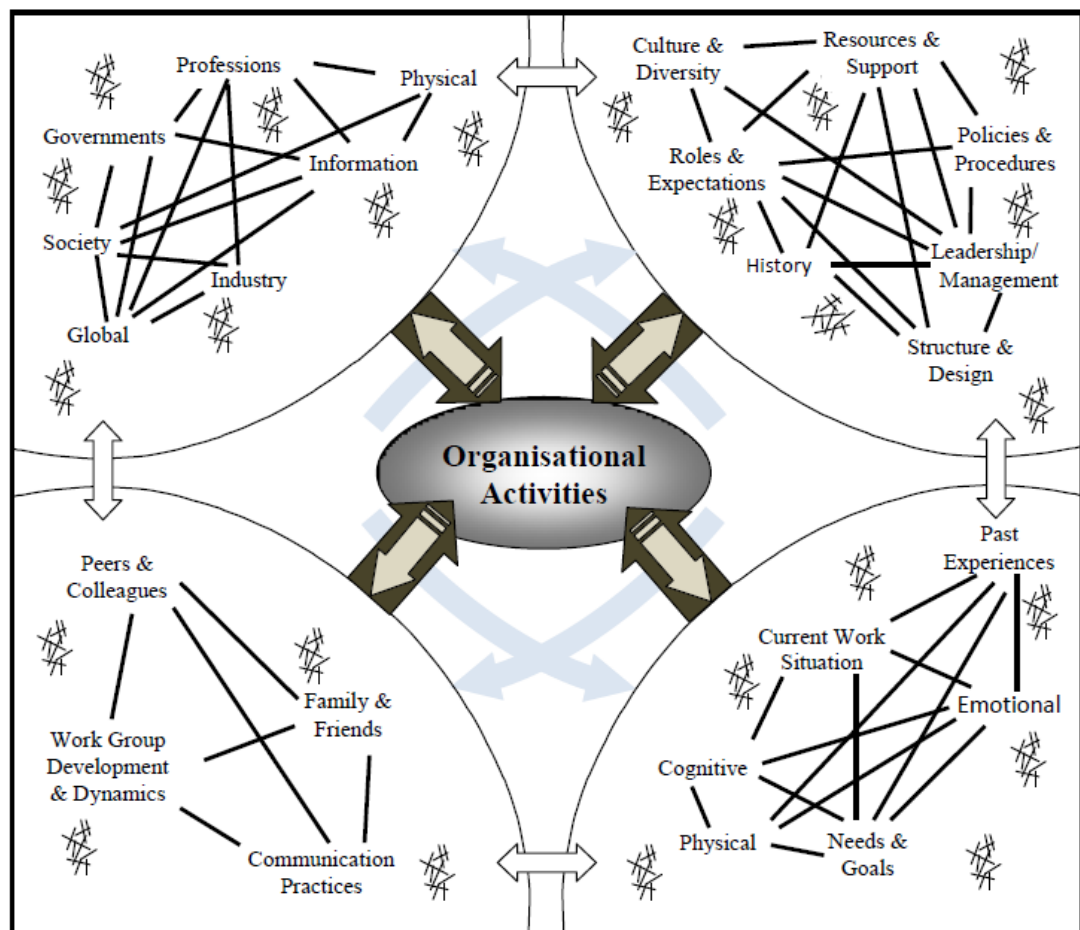


Figure 1.1 Contextual complexities of organisational activities (source Cooksey (2003, pp. 204-214))

### 1.2.2 Framework for complex adaptive systems

A recent study which expanded the domain of organisations' through the complex and evolving framework of complex adaptive system theory is that of the Health Foundation (2010). This study was selected to outline the framework, since this study succinctly draws on the overarching key characteristics from the seminal authors of complex adaptive system theory such as Stacey (1996), Brown and Eisenhardt (1998), Holland (1998), and McKelvey (2000). This research argued that the science of complexity is useful in studying organisations' or entities, which are characterised with multiple, diverse, and interconnected elements. Furthermore this study also argued that complex adaptive systems have a distinct number of characteristics which are shown in table 1.1, which is followed by a brief discussion, to highlight the key elements of the CAS framework for this study.

Table 1.1: Characteristics of complex adaptive systems (source Health Foundation (2010, p. 8))

- A large number of elements which interact dynamically.
  - Non linear interactions, so small changes can have large effects
  - A constant flow of energy to maintain the organisation of the system.
  - Openness, so it may be difficult to define system boundaries.
  - A history whereby the past helps to shape present behaviour.
  - Any element in the system is affected by and affects several other systems.
  - Elements in the system are not aware of the behaviour of the system as a whole and respond only to what is available or known locally.

#### **1.2.2.1 Dynamic and non linear behaviour**

One of the pillars of the Newtonian theory is the notion that linear behaviour and causality are grounded on the theoretical assumption, that systems work best when in equilibrium (Harkema, 2003; Stacey, 2007). However for the complex system linearity is not considered present, since depending upon the conditions that the system finds itself in, minor changes and variations can lead to unexpected and unpredictable effects that grow in time (Gleick, 1988). In other words, small changes at one point in time can have the capacity to turn into bigger changes, which are commonly referred to as a dynamic of effects, which escalate in time (Palmer and Parker, 2001). Thus this notion of the dynamic behaviour of the CAS may be considered as the result of, not only the interaction between the individual elements of the system, but also through the individual and contextual elements that compose the system (Harkema, 2003). Underlying this dynamic behaviour of the CAS, is what commentators commonly refer to as the process of emergence (Mitleton-Kelly, 2003), and self organisation (Stacey, 1992, 1993), that facilitates the complex system to evolve in an unpredictable manner.

#### **1.2.2.2 Emergence and self regulation**

Self organisation and emergence are closely linked, in the sense that emergence looks at the whole and parts of the complex system, and especially at the interaction between the two (Harkema, 2003). At this point, emergence is considered as a property that arises out of the need of the whole system to respond to changes in the environment (Mitleton-Kelly, 2003; Peltoniemi, 2005a), and as such may be considered as the link between the micro and macro behaviour of the system (Peltoniemi, 2006). For the complex system, the outcome will depend upon the behaviour of the agents or people in the system, and the chosen strategies pursued by each of the agents, and how the necessary interactions feedback and forth (Goldstein, 1999). This process is considered not only complex, but the outcome is considered unpredictable, as it is considered to emerge from the bottom-up, in a self organising manner, as a result of inner guidelines, rather than guidelines that have been imposed from the top of the organisation or from the outside (Gell-Mann, 1994; Kauffman, 1995a; Holland, 1998). To facilitate

the internal conditions necessary for the CAS behaviours of self organisation and emergence, commentators argue that organisations' need a culture that supports creativity and innovation (Wang and Ahmed, 2003); structures that allow the free flow of communication through both formal and informal channels (Goldstein, 1999; Cooksey, 2003); and where learning is considered to be core to the organisation in the absence of centrally determined rules (Fonseca, 2001; Harkema, 2003).

## **1.3 The contextualisation of this study**

In order to understand the context in which this study is conducted, it is appropriate to provide a brief background of the Intellectual Property Office (IPO), and the challenges that the Intellectual Property (IP) sector face.

### **1.3.1 Background to the Intellectual Property Office (IPO)**

The Intellectual Property Office (IPO), formerly The Patent Office had been an Executive Agency of the Department of Trade and Industry up until 2007. Following various machinery of Government changes, the IPO is currently an Executive Agency of the Department for Business Innovation and Skills (BIS). The IPO is the UK government body responsible for intellectual property, which the World Intellectual Property Office (WIPO) refers to as the creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce (WIPO, 2015). These rights include patents, designs, trade marks and copyright, that are protected by law, and enable people to earn recognition or financial benefit from what they invent or create (WIPO, 2015).

As such the IPO is responsible for the administrative granting authority for IP in the UK, which includes the processing of applications and the registration and granting of UK national Patents, Trade Marks and Registered Designs to both individual applicants and corporate bodies. The IPO is also responsible for the UK's Intellectual Property (IP) framework, in which IP legislation and its development is completed within an international forum, from which the UK government enact international directives and agreements. As such the UK

government does not develop and enact legislation in isolation, and requires the IPO to engage with a number of IP Offices on IP issues as a means to influence the IP agenda, such as the European Patent Office (EPO), the World Intellectual Property Office (WIPO); the Office of Harmonization in the Internal Market (OHIM), which is responsible for the processing and registration of the Community Trade Mark(s) and Design(s) throughout the European Union and other national IP Offices. As a result a greater emphasis is placed on national IP Offices ability to influence IP policy, to ensure national interests are taken forward through IP agreements and treaties. This is recognised by the IPO through their strategic goals, which in recent times has placed a greater emphasis on the IPO policy capability. Therefore in this context, the IPO can be considered as a conjugate between the UK Government of the day, and the individual(s) / corporate IP right holders and users; and other international IP legislative Offices such as WIPO, EPO, OHIM and other national IP Offices such as USA, Brazil and China. As such the IPO, in conjunction with other national IP offices, are trying to strike a balance between the interests of innovators and the wider public interest, whilst maintaining an IP system that fosters an environment in which creativity and innovation can flourish (WIPO, 2015). In its simplest form, a creator of an IP right is rewarded economically by being granted a monopoly for a given period of time by a government, and hence may benefit financially from what they have created. However, this reward needs to be balanced with the ultimate users of the IP right, since the creators can restrict access for example, through price during the duration of the monopoly. The monopoly granted therefore needs to be balanced to provide sufficient stimulus for creativity and innovation, whilst not restricting access to the wider public, an emotive area in respect of IP rights for life changing drugs.

### **1.3.2 The IP environment and the IPO**

The intricacies of the IP system and the importance of IP to the UK economy have been explicitly recognised by UK governments through the commissioning of both the Gowers Review (2006) and Hargreaves Review (2011). The reviews assessed the challenges the IP system faced in light of a

changing IP environment (Gowers, 2006), and how the system can be worked to promote innovation and growth (Hargreaves, 2011).

IP observers, in addition to Gowers and Hargreaves, have questioned the current IP systems ability to accommodate changes in the IP system, namely technological advances and economic globalisation of the market place, both of which have taken place at a pace that has not been known in history (Daus, 1998; Maskus, 1998; Hare, 1999; Rao, 2001; Gowers, 2006; Hargreaves, 2011). As a result, IP legislation has lagged behind technological advancements, in particular for technology associated with the digital age (Hargreaves, 2011). For example an individual who 'format shifts' music from one medium to another for personal use, such as copying a music file from a CD to an MP3 player, are infringing copyright legislation. In addition, as a result of different interpretations at of IP legislation, not all national IP Offices consider that computer programs can be protected by means of a patent. This has lead to calls from IP right users for both national and international IP legislation to be aligned with the technological advances, to allow IP users to use IP rights in a manner that is in unity with the new technologies (Hargreaves, 2011).

IP commentators also point to the pace of economic globalisation placing a considerable stain upon the IP system both nationally and globally, which is reflected in a marked increase of worldwide patent filings since the 1990's (WIPO, 2008). IP commentators report that the increases were reflecting a world that was moving towards an international system of IP rights (Maskus, 1998; Kumar and Ellingson, 2007), in which it was reported that approximately 40% of patents filed were by non-residents (Japan Patent Office, 2008). These increased filings have also coincided, with the impact of emerging economies such as China and India (Maskus, 1998) that have reportedly placed a strain on what some commentators consider as an already inadequate IP system (Maskus, 1998; Ostergard, 2000). Numerous IP commentators have reported that the capacities and capabilities of the granting authorities such as the IPO, European Patent Office (EPO) and United States Patent Office (USPTO) are being overwhelmed with

applications. This has resulted, in an ever increasing backlog of un-granted patent applications, with the USPTO and EPO reportedly having a backlog of over a million patent applications (Gowers, 2006; Japan Patent Office, 2008; Brimelow, 2009). These commentators also report that the delays in granting patents are concerning patent applicants, such as those related to hi-tech industries whose products have relatively short life spans. The delays in granting a patent can result in the value of the granted patent having little value, if the market place has moved on with more sophisticated electronic products. The delays also bring uncertainty to competitors and consumers, who have no clarification to whether a patent application covering a new product will meet the necessary requirements and be granted. In addition, for many rights holders whilst IP may be afforded multiple rights it can be extremely difficult to stop IP being copied (Gowers, 2006), in light of the cost of enforcement, in an age where ideas are expensive to make and enforce, but cheap to copy (Maskus, 1998; Ostergard, 2000). The IP system has also been placed under pressure in light of inadequate enforcement systems around the world (Han et al., 2006). Commentators point to emerging countries developing quite advanced IP granting authorities, but having some way to go towards developing adequate enforcement polices (Gowers, 2006).

As a means to overcome these challenges, national IP offices have been attempting to harmonise the IP system, which has been acknowledged by IP commentators as a cohesive attempt to move towards the globalisation of IP rights, through the Trade Related Aspects of Intellectual Property Rights (TRIPS), (Maskus, 1998; Dutfield and Suthersane, 2004). However difficulties and uncertainties have arisen in light of difference in the way individual countries define and interpret IP (Shultz and Saporito, 1996; Moga and Jonathan, 2002), and in light of differences between the IP offices and associated IP stakeholders. For example, copyright legislation is associated with a complex array of stakeholders, together with rapid technological developments, that have had the effect of making harmonisation of IP copyright laws much more difficult (Dutfield and Suthersane, 2004).

Furthermore there is an ongoing debate, about whether the IP system is fit for purpose in which IP observers have questioned the extent in which IP rights are balanced to meet the needs of the multiple and diverse stakeholders of the IP system (Unikel, 1995; Hunt and Morgan, 1995; Maskus, 1998; Nill and Shultz, 2002; Moir, 2009). Commentators have questioned whether the balance within the system has shifted towards the right holder at the expense of stifling innovation and competition, to the detriment of other stakeholders (Granstrand, 1999; Nill and Shultz, 2002), for example whether patents generate excessive protection for biotechnological inventions, at the expense of wider social needs (Maskus, 1998; Matthews, 2010). This has culminated in some IP commentators articulating for the abolishment of patent and copyright laws (Boldrin and Levine, 2006; Pozen, 2009), and others who point to the need for a IP regime to be robust in respect to technologies where imitation is quick and cheap, such as pharmaceuticals, in order to stimulate innovation (Moir, 2009).

## **1.4 Aim and objectives of the research**

The aim of this research is:

“To explore the holistic behaviour of the UK Intellectual Property Office using the Complex Adaptive System paradigm”.

The objectives are:

1. To identify an appropriate approach for exploring the Complex Adaptive System behaviours within the UK Intellectual Property Office.
2. To discern the presence of mechanistic and emergent behaviours within the UK Intellectual Property Office.

## **1.5 Research process**

This section provides an overview of the research process to be adopted. The detail and critique that underpins the research process is provided within



this study in the research methodology chapter. The researcher will carry out this research in the following steps:

- **Literature Review:** It is well documented that researchers need to establish a clear understanding of the existing body of knowledge in their specialisation area, which should come through an extensive literature review (Yin, 1994, 2003; Saunders et al., 2007). The literature review of this research will be conducted to enable the researcher to understand the complex adaptive system paradigm or way of thinking through the concepts, theory, models, knowledge and information provided in this field. In this respect the literature review sits within the post classical body of knowledge (French, 2009).
- **Selecting the Research Philosophy:** Saunders et al. (2007) stated that the research philosophy reflects the way we think about the development of knowledge, which in turn reflects the way that we go about doing research. Furthermore based on the aim and objectives of this research stated in section 1.4 of this chapter, an interpretive stance is adopted as the research philosophy for this study (Gummesson, 2006; Wilson, 2014).
- **Selecting the Research Approach:** There are two major categories of approaches to research. These two approaches are named as qualitative and quantitative (Hussey and Hussey, 1997; Wilson, 2014). During qualitative research, the researcher is interested in meaning and understanding of a phenomenon (Wilson, 2014). Ghauri and Grønhaug (2005) stated that *“Qualitative methods are therefore more suitable when the objectives of the study demands in-depth insight into a phenomenon”*. This research aims to study and understand in-depth, the phenomenon under investigation.

- **Selecting the Research Strategy – The Case Study**

The purpose of the research strategy is to satisfy the research aim and objectives given in section 1.4 of this chapter. Robson (2011) defines the case study, as a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon, within its real life context using mixed method sources of evidence, such as can be found in this research. This research uses a single and holistic case study, in which the unit of analysis is the “agents / actors” and the rationale or objective is to capture the circumstances and conditions of an everyday or commonplace situation (Yin, 2003; Wilson, 2014). However an important issue was the ethical consideration, through the gathering and reporting of confidential information (Wilson, 2014).

- **Selecting the Data Collection Methods:** To conduct a case study, the researcher has to identify the sources of evidence (Denzin and Lincoln, 2000). Yin (2002) mentioned that there are six such sources: documents, archival records, interviews, direct observation, participation observation and physical artefacts. In this research, the two main sources of evidence used are interviews (in-depth semi structured interviews (Hannabuss, 1996; Saunders et al., 2007) and secondary archival data (Yan and Duan, 2003; Buxton and Radnor, 2012). However, there is recognition that weaknesses may exist, particularly in relation to the secondary sources of data used for the study (Kolassa et al., 2013; Wilson, 2014).

- **Conducting a pilot case study:** Many commentators in research methodology agree that at some stage in the research design process, questions provided by the researcher should be subjected to a preliminary test (Hussy and Hussey, 1997; Yin, 2003). This is known as piloting, where researchers can refine the questions and focus on particular areas that may have been unclear to participants previously (Saunders et al., 2007). This research conducted a pilot study, with

another organisation in the Civil Service, so that any potential problems with conducting the research could be reflected upon, and remedied beforehand.

- **Analysis of Collected data:** The collected data from the case study of the Intellectual Property Office (IPO) is analysed according to suitable methods which are fully justified in the methodology chapter in this study (Gibbs, 2009; Ringwald, 2012). The analysis uses the literature review to make sense of the findings.

The above bullet points provide a brief overview of the main steps of the research process, which are discussed in more detail in the methodology (chapter 3) in this study.

## **1.6 Scope of the study**

The scope of the study is confined to:

- The external context is confined to how the IPO view the environment and the difficulties and or issues they face. As such the scope of the study excludes any other National IP Offices, or related IP governing bodies; and
- The internal context is confined to investigating the internal mechanisms through the behaviour of the individuals, teams, and departments of the IPO.
- The scope excludes any mathematical inferences through the science of complexity.

## **1.7 Structure of the research**

The structure of the study is divided into six chapters, as shown in figure 1.2.

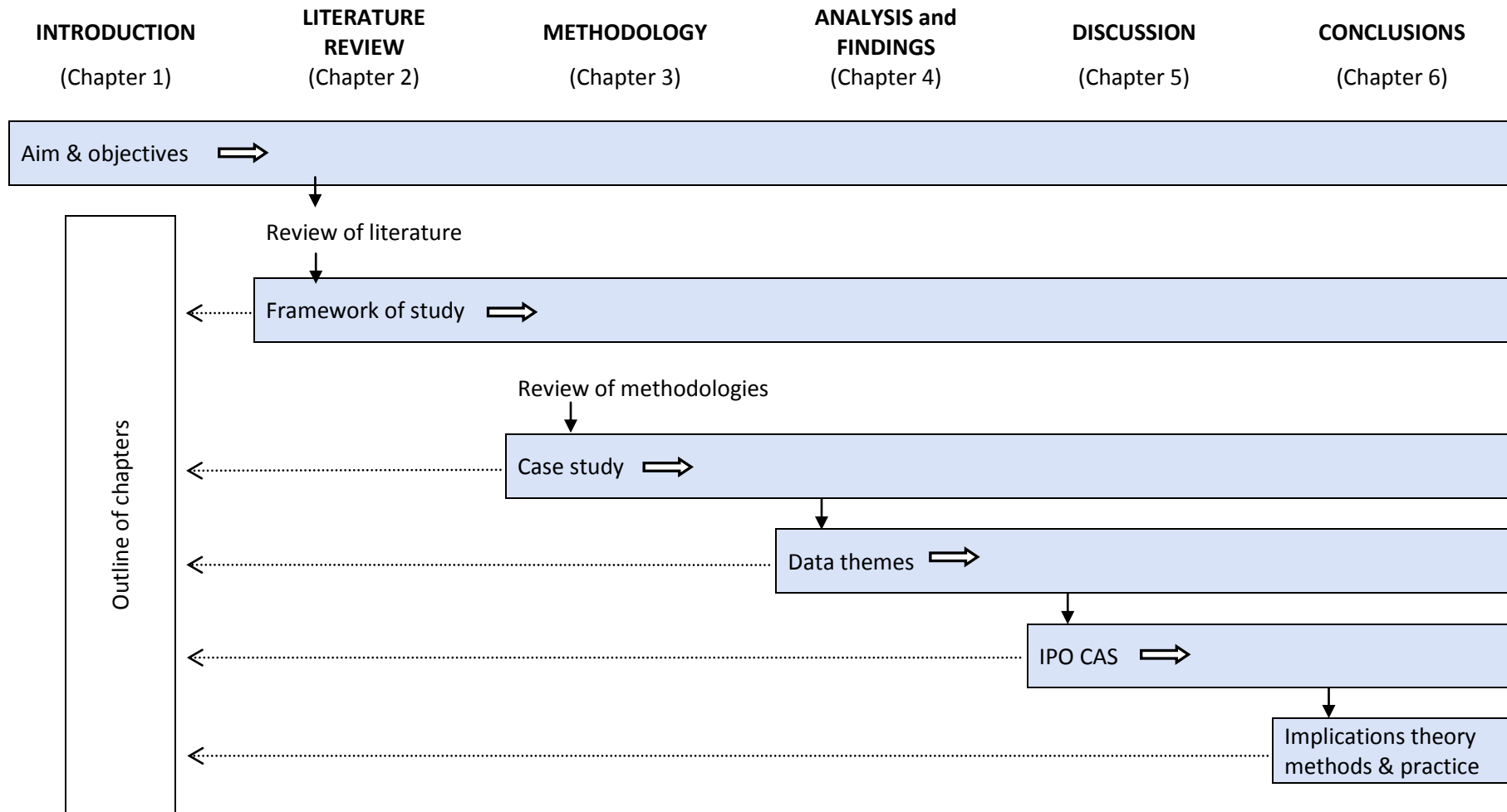


Figure 1.2: Structure of Study

## 2.0 Literature Review

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### 2.1 Introduction

The previous chapter presented the aim and objectives and the research framework for this study. In this chapter the researcher will present a critical review of the literature to develop a thorough understanding, and insight into previous research that relates to this study's research aim and objectives. The review of the literature will set this research in context, by critically discussing and referencing work that has previously been undertaken, by drawing out key points and presenting them in a logical argued way, and highlighting those areas in which the researcher is able to provide fresh insights.

The structure of the chapter is based around what can best be described as a 'funnel' shown in figure 2.1 (Ringwald, 2008), and as such is divided into five key areas as follows:

1. The broad strategic context focuses on uncertainty in the environment.
2. The topic specific focuses on the properties and behaviours of the complex adaptive system.
3. The detailed application will select a model for the study to demonstrate the behaviours that are conveyed through the complex adaptive framework.
4. The context focuses on the learning organisation.
5. The chapter concludes with a summary of implications for theory and the remainder of the study.

To reflect the literature that underpins this study the theoretical framework that follows, will reflect the focus of the research through the complex adaptive system paradigm.

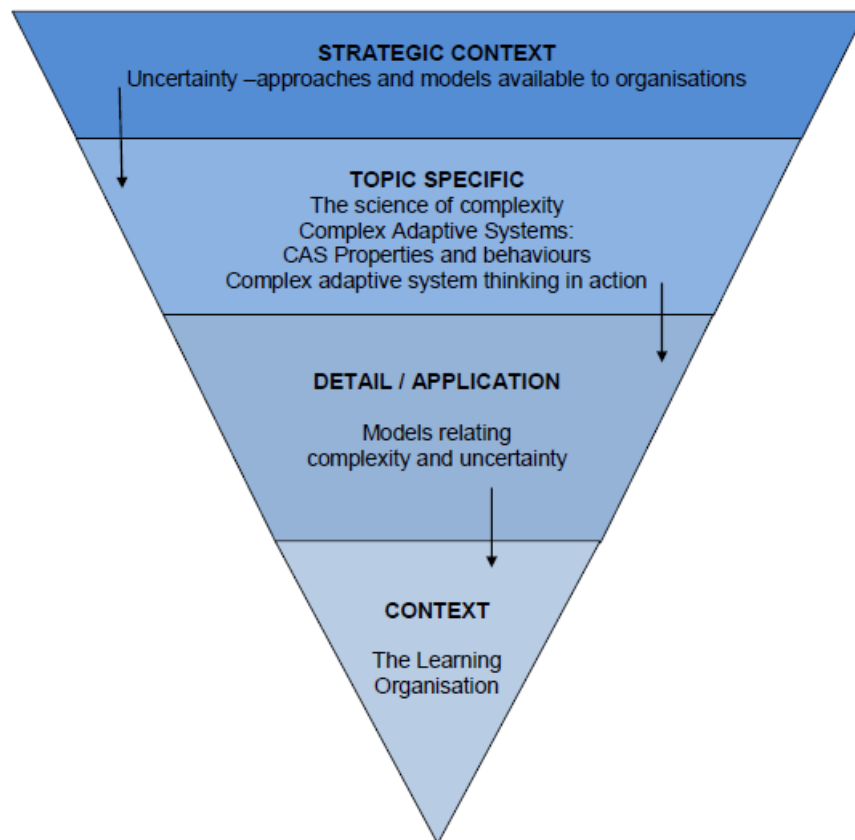


Figure 2.1: Structure of the literature (source Ringwald (2008))

## 2.2 Theoretical framework

The purpose of the theoretical framework is for the researcher to establish a clear understanding of the existing body of knowledge in their specialised area, which should come through an extensive literature review (Yin, 2003; Saunders et al., 2007). As discussed in the introduction (section 1.2.2), the focus of this study revolves around discerning the mechanical and complex adaptive system behaviours. Moreover, the mechanical or mechanistic system is portrayed as deliberately designing their internal structures and plans to match their external environment, and therefore control the implementation of their strategy (Selznick, 1957; Chandler, 1962). Thus the mechanical system may be considered as a perspective of an organisation, through the lens of a rational deterministic view of the environment (Seel, 1999; Boulton and Allen, 2004). This model assumes that management or

the few executives at the top of the organisation are able to control the organisation in a top down fashion (Seel, 1999). Furthermore control in this context is also associated with either bringing or maintaining the system back into equilibrium as a means to ensure the system conforms to policy and practice (Fayol, 1949). However in contrast, the complex adaptive system is considered to support the notion that organisations' exist in changing environments (Nonaka, 1988; Pascale et al., 2000). Underlying this perspective is the dynamic behaviour of the CAS, which is commonly associated with emergence (Mitleton-Kelly, 2003) and self organisation (Stacey, 1992, 1993) that facilitates the system to evolve in an unpredictable manner. As such the CAS perspective is considered as a system which is composed of a diversity of agents that interact with each other, mutually affect each other, and in doing so generate behaviour for the system as a whole (Holland, 1998; Harkema, 2003). This process is considered not only complex but the outcome is considered unpredictable, and is considered to emerge from the bottom up in a self organising manner as a result of inner guidelines, in contrast to the rules that have been imposed from the top of the organisation or from the outside (Gell-Mann, 1994; Kauffman, 1995; Holland, 1998).

As such the literature and hence the theoretical framework that will form the principle academic discipline that will underpin this study, will be from the literature on complex adaptive system theory, and is depicted in the theoretical framework model (figure 2.2). A review of the literature on complex adaptive system theory indicates that a number of studies have used the post classical concepts, which model an organisation based on the complex or living system paradigm in a wide variety of contexts (French, 2009). These include Team creativity (Cirella et al., 2014); Digital social networks (Hasgall, 2013); Management of integrated care (Edgren and Barnard, 2012); Supply chain networks theory (Hearnshaw and Wilson, 2013); Healthcare organisations' (Plesk and Wilson, 2001; Redfern and Christian, 2003; Health Foundation, 2010), and management topics such as Change management (Beeson and Davis, 2000; McMillan, 2005). From an IP perspective, studies which have used the complex adaptive system theory

have focused on, Property Rights (Harper, 2014); Complex adaptive innovation systems (Cooke, 2012); Intellectual copyright system (Tussey, 2013); Pricing of copyrighted information goods (Khouja et al., 2008); Strategic legal and business behaviour as a form of regulation (Matwysyn, 2006); Innovation (Tilebein, 2006); Technology as a complex adaptive system: evidence from patent data (Fleming and Sorenson, 2001); and Managing distributed innovation in turbulent markets (Sawhney and Prandelli, 2000). These studies have all focused on CAS and the different aspects of the IP system, in contrast with this studies focus which is the behaviour of the UK IP granting organisation as a complex adaptive system, or what this study assigns as the context of the research through the IPO. Consequently this study will address this 'gap' in the literature through the research aim and objectives and what is depicted as 'X' in the theoretical framework model (figure 2.2).

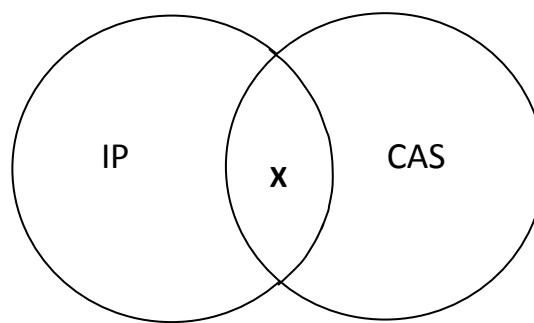


Figure 2.2: Theoretical framework model (source Fisher (2007))

## 2.3 Structure of the literature

To meet the aim and objectives, the structure of this chapter is broadly divided into five key areas as shown in figure 2.1 which is explained below.

1. The broad strategic context of the study will review what the literature regards as the uncertainty concept from the perspective of the external environment, so that the study can benefit from understanding the different approaches and models available to organisations' in assessing uncertainty (Duncan, 1972; Carbonara and Caiazza, 2010; Vecchiato, 2012).



2. The topic specific will focus on the properties and behaviours of the complex adaptive system, so that the study can benefit from understanding the system from the non linear and complex paradigm (Holland, 1988; Mitleton-Kelly, 2003; Peltoniemi, 2006).
3. The detailed application will use the selected model for the study, to demonstrate the behaviour(s) that are conveyed through the complex adaptive system paradigm, in response to uncertainty in the business environment (Boulton and Allen, 2004).
4. The context of the literature reviews the literary work surrounding the learning organisation, so that the study will benefit from one of the key behaviours that facilitates the ability of the complex system to adapt and respond to the environment (Smith and Taylor, 2000; Cooksey, 2003; Ehin, 2010).
5. The chapter will conclude with a summary of the implications for theory, and the remainder of the study.

## **2.4 Uncertainty**

As outlined in the contextualisation of this study, or what may be considered as the problem that this research is addressing (section 1.3), there is evidence to suggest that the external environment is changing, as a result of a number of factors which include globalisation, and technological changes; all of which is creating uncertainty, with respect to what the future environment will look like, and the impact that such changes may have on the IPO. The strategic stance of the literature will draw upon a number of models from the uncertainty literature, to understand the dimensions of uncertainty as a concept, and the challenges this presents.

### **2.4.1 Defining uncertainty**

The term uncertainty is used in a variety of ways and different contexts. In common speech uncertainty is defined by the Encarta Dictionary, as one of doubt or a lack of accurateness, and usually refers to the lack of knowledge about an event, in terms of magnitude, duration, continuance or variation (OED, 1989). Eldridge et al. (2014) argue that environmental uncertainty refers to the difficulty an organisation has in predicting the future because of incomplete information or changing conditions, and arises as a result of natural conditions; the political and economic climate; or the actions of competitors, customers, suppliers and regulators. Merriam-Webster (2002) contend that uncertainty may also be referred to as having different degrees of uncertainty, from not quite certainty to a complete lack of knowledge. Geersbro and Ritter (2010) point out, that the opposite of uncertainty is certainty; in the context of an organisations' ability to accurately determine and predict future events. As such uncertainty that an organisation experiences, or what may be regarded as strategic uncertainty, is a multidimensional construct, since it depends on external events, perception and reaction (Mitchell and Saren, 2006; Pinkse, 2007).

### **2.4.2 Environmental dimensions / features**

The consensus from the literatures indicates that the general or macro environment, in which the organisation sits, affects the organisation indirectly through the political, economic, ecological, societal, and technological landscape that surround the business microenvironment (Faley and Randall, 1998). Vecchiato (2012) argues, that the two environmental features that determine the general level of uncertainty for the organisation are complexity and the rate of change. In this respect Duncan (1972) and Vecchiato (2012) argue that complexity results from:

- Heterogeneity of drivers of change and new events in the business environment;

- The relationships and mutual influences among drivers of change and the relationships of each driver with a large number of components of the micro and macro environments; and
- The low rate of evolution and drivers of change.

Furthermore, Duncan (1972) also argues that there is a correlation between the number of environment factors that the organisation need to consider, and the level of uncertainty present in the environment. This correlation is depicted in Duncan's (1972) model (table 2.1) which proposes a categorization of uncertainty, based on two aspects of the environment namely variability and complexity.

Table 2.1: Environmental dimensions / features and uncertainty (source Duncan (1972, p. 320))

|         | Simple  | Complex  |
|---------|---|--|
| Static  | <b>Cell 1: Low perceived uncertainty</b><br>1. Small number of factors and components in the environment<br>2. Factors and components are somewhat similar to one another<br>3. Factors and components remain basically the same and are not changing                       | <b>Cell 2: Moderately – low perceived uncertainty</b><br>1. Large number of factors and components in the environment<br>2. factors and components are not similar to one another<br>3. factors and components remain basically the same               |
| Dynamic | <b>Cell 3: Moderately –high perceived uncertainty</b><br>1. Small number of factors and components in the environment<br>2. Factors and components are somewhat similar to one another<br>3. Factors and components of the environment are in a continual process of change | <b>Cell 4: High perceived uncertainty</b><br>1. Large number of factors and components in the environment<br>2. Factors and components are not similar to one another<br>3. Factors and components of environment are in a continual process of change |

The simple-complex dimension defines the number of factors which are taken into consideration in the decision units environment, and the static-dynamic dimension indicates the degree to which these factors in the decision units environment, either remain basically the same over time, or are in a continual process of change (Duncan, 1972). This view is also reflected by Mason (2007) who describes complexity as the measure of heterogeneity or diversity in the environment, such as the customers, suppliers, socio-politics and technology, and contends that as complexity increases, the ability for the organisation to use information, to plan and predict the future becomes ever more difficult; and as such argues that adaptation to this changing environment, becomes more problematic. An example of the uncertainties and complexities arising from external events (Mitchell and Saren, 2006; Pinkse, 2007), is the effect of globalisation of the market place (Carbonara and Caiazza, 2010), which is shown in table 2.2.

Table 2.2: Factors that have affected the level of uncertainty in banking industry (source Carbonara and Caiazza (2010, p. 40))

|          | Low level of uncertainty     | Medium level of uncertainty   | High level of uncertainty                                 |
|----------|------------------------------|---|---|
| Global   |                              | New competitors from emerging economies<br>Geopolitical risks.<br>Industry convergence and deconstruction associated with technological advances. | Mortgage crisis<br>Financial crisis<br>Terroristic attack |
| European | European Monetary Union 2000 | Enlargement 2004<br>Basel II<br>Bank Law  | Enlargement 2007  |

In this respect Carbonara and Caiazza (2010) point to the diversity through the regulations, institutions and economic events of global markets that affected the level of uncertainty in the banking industry, which negated the organisations' ability to influence (figure 2.3).

|          |                              |   |   |
|----------|------------------------------|---|---|
| Global   |                              | New competitors from emerging economies<br>Geopolitical convergence and deconstruction associated with technological advances | Mortgage crisis<br>Financial crises<br>Terroristic attack |
| European | European Monetary Union 2000 | Enlargement 2004<br>Basel II<br>Bank Law  | Enlargement 2007  |
|          | Low level of uncertainty     | Medium level of uncertainty   | High level of uncertainty                                 |

Figure 2.3: Firms space of influence (source Carbonara and Caiazza (2010, p. 41))

In this respect Bodde (2007) and Walton (2009), identify two major drivers behind the prevalence of uncertainties in the environment. Technological developments surrounding information and communication; and changing markets, more recently at the global level, in which consumers are looking for more choice, quicker delivery, more customisation and value for money.

### 2.4.3 Uncertainty and change

A reasonable question to ask is what effect does the nature of change have on the organisations' uncertainty?

Makridakis and Heau (1987) argue that uncertainty in the environment can be categorised in terms of the nature of change. Furthermore Stacey (1990, 1992, 1993) developed a classification of change situations which is closely related to predictability and uncertainty. Therefore by synthesising these models (table 2.3) it is possible to show the nature and types of change associated with the categories of uncertainty, and the impact on cause and effect (Stacey 1990, 1992, 1993).

Table 2.3: Uncertainty and change (source synthesised from (Makridakis and Heau (1987); Stacey (1990, 1992, 1993))

|                      | Nature of Change   | Types of Change   |
|----------------------|--|---|
| <b>Stable</b>        | <b>Normal</b><br>Uncertainty can be assessed with enough accuracy to be incorporated into plans. Forecasting tools can be used to identify patterns and make decisions for the future (Makridakis and Heau, 1987).   | <b>Closed change</b><br>Refers to situations of equilibrium: In these situations the consequences of events are understandable in the past and perfectly predictable in the future. Further for organisations in these situations there are clear linear relationships between cause and effects (Stacey, 1990, 1992, 1993).  |
| <b>Progressive</b>   | <b>Unusual</b><br>There are several possible future scenarios, and even when uncertainty can be estimated to an extent, and general patterns can be identified, details about the future, such as the timing and degree of events are difficult to assess (Makridakis and Heau, 1987). | <b>Contained change</b><br>Refers to situations close to equilibrium: In these cases for organisations causality is statistical, and the sequence of events may be studied using probabilities making forecasting possible. However this ability for the organisation to forecast diminishes over time and hence it is effective only in the short term (Stacey, 1990, 1992, 1993). |
| <b>Dynamic</b>       | <b>Unexpected</b><br>The system has a high variety of possible future scenarios. Patterns are difficult to identify, making it difficult to predict and plan (Makridakis and Heau, 1987).  |   |
| <b>Unpredictable</b> | <b>Inconceivable</b><br>At this level, the future is so diverse that inconceivable changes can take place. Forecasting, planning and strategy as they are currently perceived are not relevant (Makridakis and Heau, 1987).  | <b>Open ended change</b><br>Refers to situations far from equilibrium where uncertainty and ambiguity are present: In these situations for organisations, it is not possible to forecast the future of the system as the connections between cause and effects are lost through the complexity of their interactions (Stacey, 1990, 1992, 1993).                                    |

From table 2.3 it is possible to argue that when the environment is regarded as stable, uncertainty can be assessed with sufficient accuracy, to allow the organisation to use forecasting and prediction tools based on patterns from previous years. This is considered as closed change, when the organisation is in equilibrium with the environment, in which there are clear linear relationships between cause and effect. However when uncertainty is considered at its most unpredictable, and where the future is considered diverse that inconceivable changes can take place, this refers to open ended change, or situations where the organisation is considered far from equilibrium. During open ended change it is not considered possible to forecast the future, since the connections between cause and effect are lost as a result of the complexity of their interactions.

Courtney et al. (1997) also summarises the classification of uncertainty, and potential responses (table 2.4), from which it is possible to argue that the degree of uncertainty that the organisation experiences is impart due to the perception and or the tolerance to uncertainty of the decision makers. In this context the rational model of the organisation, which is primarily based on the notion that the senior managers at the top of the organisation control and make the decisions, and therefore it is reasonable to assume that the perception of uncertainty is primarily due to these few executives (Ansoff, 1991; Porter, 1980). In contrast Barnard's (1938, p. 106) model argues that "under most ordinary conditions, even with simple purposes, not many men can and see what each is doing or the whole situation". As a means to overcome the perceptions of the few executives, the adaptive stance uses all of the staff within an organisation to overcome environmental uncertainty. The literatures point to the agents of the organisation forming solutions, and responses based on a range of diverse perspectives, which seek to position the organisation to make timely responses to events and changes (Quinn, 1980; Mintzberg, 1990). For the organisation the agents of the system are the individuals and the teams that make up the organisation (Harkema, 2003). However as Anderson et al. (1994) and Geersbro and Ritter (2010) indicate both individual and collective uncertainty, can still arise due to the limited network horizon, and as such it is still possible to argue that this perceived

lack of perfect information (Barnard, 1938), together with managers perceptions of the environment (Adorno et al., 1950; Lawrence and Lorsch, 1967; Berlyne, 1968; Duncan, 1972), may be considered as having a bounded effect on managers decisions and hence strategic options (Simon, 1957; March and Simon, 1958; Cyert and March, 1963). In this respect Carbonara and Caiazza (2010) model (table 2.5) identifies the differences in perception and reaction to uncertainty. A key implication that may be gleaned from this model is that proactive firms are considered to turn a potential crisis into an opportunity, as a result of being proactive in light of uncertainty.

Table 2.4: Four levels of uncertainty (source Courtney, et al. (1997))

|   | <b>What can be Known?</b>                                 | <b>Analytic Tools</b>  | <b>Examples</b>  |
|---|---|--|--|
| <b>Level 1</b><br>A Clear Enough Future | A single forecast precise enough for determining strategy | "Traditional strategy tool kit   | Strategy against low-cost airline entrant  |
| <b>Level 2.</b><br>Alternative Futures  | A few discrete outcomes that define the future            | Decision analysis<br>Option valuation models<br>Game theory            | Long-distance telephone carriers strategy to enter deregulated local-service markets<br>Capacity strategies for chemical plans |
| <b>Level 3</b><br>A range of Futures    | A range of possible outcomes                              | Latent –demand research<br>Technology forecasting<br>Scenario Planning | Entering emerging markets such as India<br>Developing or acquiring emerging technologies in consumer electronics               |
| <b>Level 4</b><br>True Ambiguity        | No basis to forecast the future                           | Analogies and pattern recognition<br>Non Linear dynamic models         | Entering the market for consumer multi-media applications<br>Entering the Russian market in 1992                               |



Courtney et al. (1997) classifies potential responses (table 2.4) and as such indicates that when factors are known and the change in the market regarded as predictable, then probability can be used to forecast. This is reinforced by the rationale commentators (Ansoff, 1991; Porter, 1980) who point to the reaction of perceived uncertainty based on decisions around probability and predictability. However Morgan and Henrion (1990) argue that probability is not the right tool for strategic decision making, when uncertainties arise through a lack of information, disagreements between experts, linguistic imprecision or pure unpredictability. The “adaptive” stance to environmental uncertainty also argues against prediction as much as possible, and points to organisations’ focusing their efforts on responding to emerging changes in the environment, and emphasise continuous experimentation around different scenarios based on environmental scanning (Vecchiato, 2012). Suh et al. (2004) also argues that scanning the environment, is one of the most important duties to reduce uncertainty in the environment; to achieve competitive advantage through superior information gathering; to gain knowledge about stakeholder priorities and demands; and to generate strategic change for the organisation.

Table 2.5: Framework of perception and reaction to uncertainty (source Carbonara and Caiazza (2010, p. 42))

| <i>Reaction to<br/>uncertainty</i> | <i>Perception of uncertainty</i>   |   |
|------------------------------------|--|---|
|                                    | <i>Low</i>   | <i>High</i>   |
| <i>Proactive</i>                   | <i>Consolidators</i><br>Move faster to adapt to changes depending on high level of uncertainty                       | <i>Champions</i><br>Build a clear vision of a valuable future                   |
| <i>Reactive</i>                    | <i>Laggards</i><br>Unable to have a correct perception of uncertainty and to adapt to a rapidly changing environment | <i>Value-driven</i><br>Use correct perception of uncertainty to position better |

#### 2.4.4 Summary and implications for organisations

This section of the literature has provided theoretical propositions about the concept of strategic uncertainty, based on the different perspectives available

through the analysis and comparisons of models which classify uncertainty. As such uncertainty may be considered as the perceived variety of states in the environment, the perceived degree of change, and the amount of knowledge about these states for a particular organisation. The models serve to demonstrate strategic uncertainty as a multidimensional construct since it depends upon external events, perception and reaction. The models also serve to argue that the increase in uncertainty and ambiguity is associated with the connections between cause and effect being lost through the complexity of the organisations' interactions. As a result of this complexity perspective, the next section will review the literature from the complexity paradigm, so that this study can benefit from understanding the key elements and underlying assumptions therein, which will lead to what may be regarded as the ultimate goal through the definition and associated characteristics of what a complex adaptive system is.

## 2.5 Defining complexity

The origins of complexity theory started in the late nineteenth century, through a number of directions in which Allen (2011, p. 802) articulates as founded from a number of sources which he quotes as:

“American philosophers (Buchler, 1955, on Peirce; James, 1995), a mathematician (Poincaré, 1890), several physicists through the advent of quantum physics, cybernetics (Ashby, 1956), general systems theory (von Bertalanffy, 1968), Lorenz's (1963) mathematical exploration of weather patterns, Haken's (1977) work on synergetics, and Prigogine's non equilibrium thermodynamics (Nicholis and Prigogine, 1989), which built on this theme of uncertainty”

As such, from the perspective of an organisation these systems are considered to be open to the environment, and as a result exchange information, energy and material with their environment (Allen, 2011).

The term complexity is rooted in the Greek word *plektos*, which means “twisted or “braided”. In this respect the Latin word *complexus* or “braided together” from which the English word of complexity is derived (Gell-Mann, 1996).

Further the Santa Fe Institute who have a reputation as one of the leaders in the field of complexity theory has produced the following definition:

*“Complexity refers to the condition of the universe which is integrated and yet too rich and varied for us to understand in simple mechanistic or linear ways. We can understand many parts of the universe in these ways but the larger and more intricately related phenomena can only be understood by principles and patterns –not in detail. Complexity deals with the nature of emergence, innovation, learning and adaptation”* Cited in Battram, (2001, p. 12)

Murray (1998) also adapted a definition of complexity by Coveney and Highfield (1995) to fit an organisational environment as follows: [Murray’s comments in brackets]

*“The study of the behaviour of macroscopic collections [like organisations] of such [basic but interactive] units [like people] that are endowed the potential to evolve over time”.* Highfield, (1995, p. 7)

From these definitions, the key elements that are conveyed when discussing a complex system is the notion that the complex nature of the system may be identified through the richness and variety in structure, which is unable to be understood in detail, only in terms of general patterns. From this overarching perspective from the Science of complexity, management thinkers have used the inherent principles to explore the notion that organisations’ are complex adaptive systems existing in changing environments (Nonaka, 1988; Stacey, 1993, 1996, 2000; Pascale et al., 2000). The context of this research takes place within a changing environment and as such the focus of the study relates to the organisational linkages with the environment, so that the organisation can remain appropriately sensitive to such changes (Brooks, 2005).

## **2.6 Complex adaptive systems**

### **2.6.1 Defining a complex adaptive system**

In its most simple form, a complex adaptive system is considered as a way of thinking about and analysing things by recognising complexity, patterns and interrelationships, rather than focusing on cause and effect (Edgren and Barnard, 2012). The most common definition is based on the work of John

Holland, who portrays the complex adaptive system, as a dynamic network of agents acting in parallel, constantly reacting to what the other agents are doing, which in turn influences behaviour and the network as a whole (Holland, 1988). Several researchers perceive organisations' as complex adaptive systems (Gell-Mann, 1994; Axelrod and Cohen, 1999; Coleman, 1999), in which the interacting agents follow simple rules, interact with their environment, and as such alter the environment they are responding to, by virtue of their simple actions (Sherman and Schultz, 1998). In this respect figure 2.4 shows a simple representation of the components of the CAS, to highlight what the literature reflects as the interactions within the system, which form emerging patterns, which in turn feed back into the system, and further influence the interactions of the agents (Health Foundation, 2010). Figure 2.4 also reflects a number of characteristic behaviours of a CAS that have been referred to by the literatures, namely:

- Dynamic – A CAS exists in a state of flux, because of the number of agents, their interdependence and their openness to external influences such as the environment, a CAS changes constantly and discontinuously (Briggs and Peat, 1989).
- Massively entangled - Relationships in CAS are complicated and enmeshed. These systems are massively entangled, because the component parts of the systems and the variables describing those parts are large in number, and interrelated in complicated ways (Kontopoulos, 1993).
- Scale independent – A CAS functions simultaneously at many different scales of organisation (West and Deering, 1995).
- Transformative – In light of the CAS and its agents being open to the environment, transformation occurs across the system's external boundaries (von Bertalanffy, 1968; Weick, 1979).

- Emergent – CAS exhibit emergent, or self organising behaviour, through new patterns that are generated by the interaction of the agents. As such CAS are sensitive to small changes in initial conditions (Lorenz, 1993; Bak, 1996).

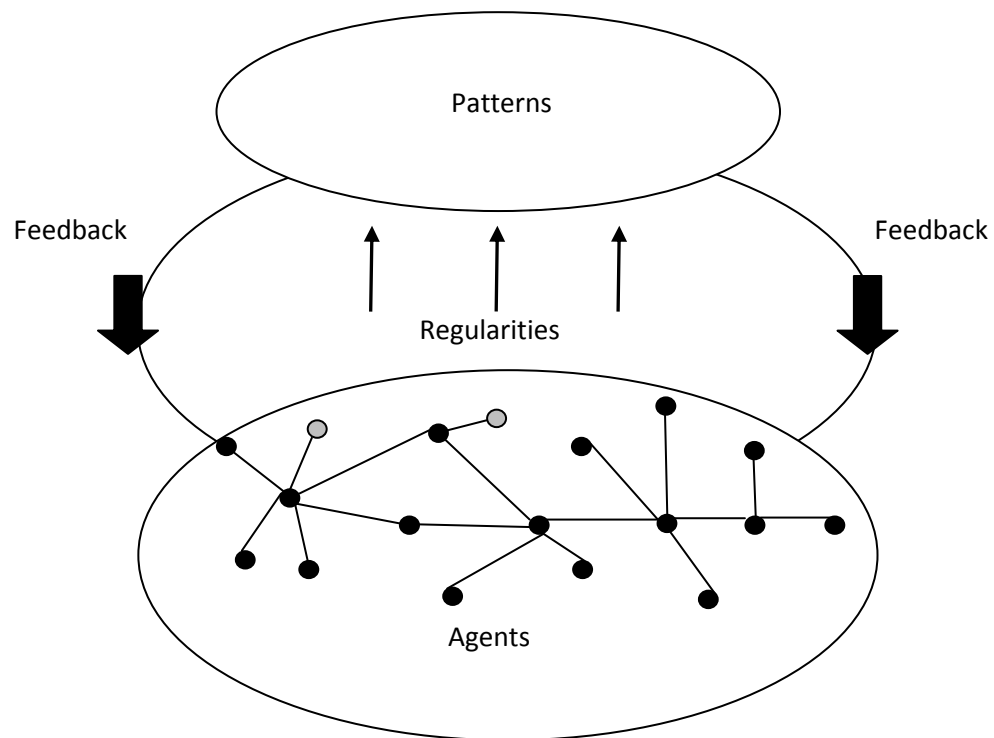


Figure 2.4: Representation of the components of the complex adaptive system (source Health Foundation (2010, p. 8))

### 2.6.2 The main properties and concepts of complex adaptive systems

As previously referred to (section 2.5) of this chapter, the science of complexity comes from a wide range of sciences and disciplines including physics, biology, psychology, mathematics and ecology. It is a term used to a collection of scientific disciplines, all of which are concerned with finding patterns among a collection of behaviours or phenomena (Wood, 2000). From the literature, one model which encapsulates the wide range of disciplines, Mitleton-Kelly's (2003) generic principles of complexity (figure 2.5). This model further emphasises that complexity builds on and enriches systems theory, by articulating additional characteristics or properties of complex systems, by emphasising their interrelationship and interdependence

(Mitleton-Kelly, 2003). From figure 2.5, for the purpose of this research, the CAS properties that will be emphasised and hence discussed in detail, will be those that the researcher considers most relevant for this study. However because of the interrelationship and interdependence of the properties, they will not be discussed in isolation.

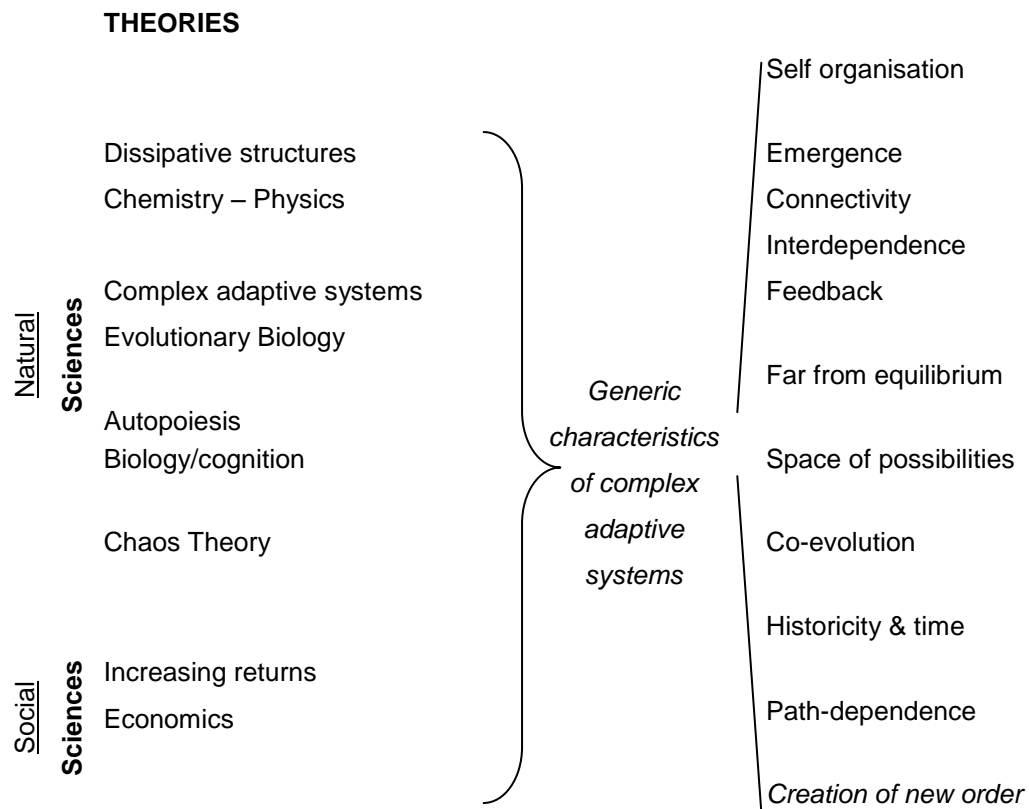


Figure 2.5: Generic principles of complexity (source Mitleton-Kelly (2003, p. 25))

### 2.6.2.1 Co-evolution / Fitness landscape / Tipping points

Co-evolution may be described as the evolution of the living system within a network of other interacting living systems (Stacey, 2000), in which the dynamics between them is viewed as constantly changing in a non-linear fashion, with both competition and co-operation working simultaneously, leading to not just evolution but also co-evolution (Seel, 1999; Mitleton-Kelly, 2003). As a result of this interaction of living systems, most of the literature surrounding co-evolution revolves around the interaction of systems, in which the change or actions of one system affect another (Stacey, 2000; Peltoniemi,

2006). As such Merry (1999) asserts that co-evolution is when the change or fitness in one system, changes the fitness of another system and vice versa. Kauffman (1993) also argues that co-evolution is similar to adaptation, through the notion that the system never reaches equilibrium, and as such continues to strive for progress, through growth or sustainability. A suitable definition for this research is that of Murmann (2003) who states that co-evolution takes place, if and only if both of the entities “have a significant impact on each other’s ability to persist” (Murmann, 2003, pp. 21-22). One model that is reflective of Murmann’s (2003) definition, may be considered in the context of the business eco system (figure 2.6), in which the co-evolution process, is viewed as taking place between organisations’ that are interconnected and therefore have the potential to induce change on each other (Peltoniemi, 2006). In this context, Hannon (1997) draws an analogy between organisations’ and biological organisms operating within a rich network of interactions, and as such argues that both biological ecosystems, and the economic systems which are formed, are complex adaptive systems.

In light of these interactions, Pagie (1999) defines three types of co-evolution, and the impact each type may have on the system as follows:

- Competitive - where competitors may make a move in order to gain competitive advantage in relation to each other. For example a price war, or the development of competing technologies;
- Mutualistic - may be observed when organisations’ develop capabilities for co-operation and complementation in order to compete with a third party. For example hardware and software are developed to complement each other, and the organisation involved develop those technologies; and
- Exploitative - may be detected in a situation where one organisation is significantly more powerful than the others. For example, in the context of a large corporation and its suppliers.

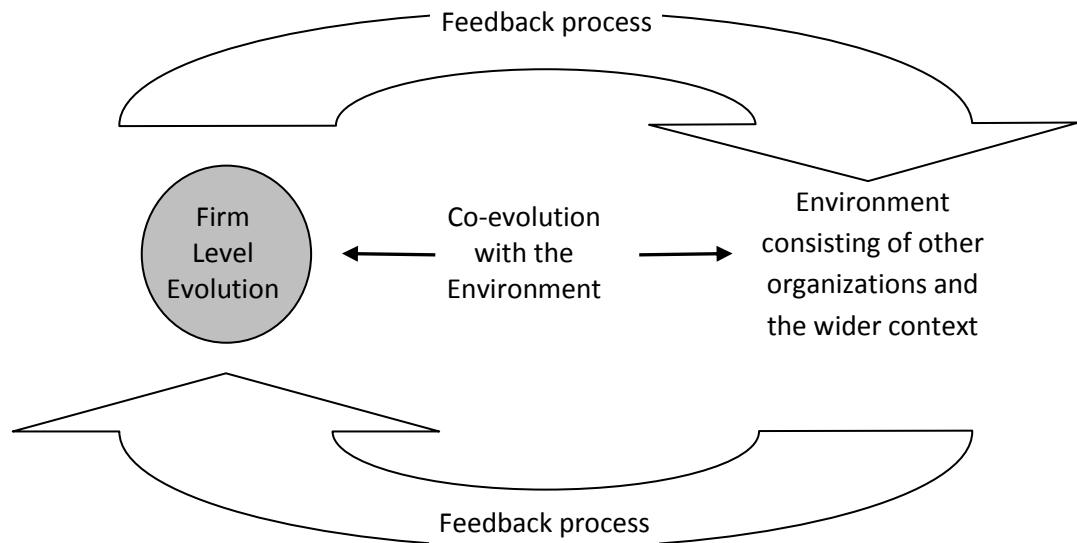


Figure 2.6: Co-evolution in a business ecosystem (source Peltoniemi (2005a))

However whatever the cause of co-evolution, Peltoniemi (2005b) argues, that there are preconditions that need to be fulfilled in order to have meaningful co-evolution such as:

- Scarcity of customers that induces selection pressure.
- Conscious choice that enable the organisation to change.
- Interconnectedness of the organisation, that enables the organisations' to have an effect on each other; and
- Feedback processes, which carry the long term consequences of co-evolution.

As a result of the change that may have been triggered internally or from the environment (figure 2.6), Boulton and Allen (2004) draw attention to the systems fitness, which may be identified in a terrain of hills and valleys that represent all possible strategies available to the organisation. Where strategy development may be considered as the desire for the living system to find the optimal point or points in this terrain, in which good strategies can be considered as sitting on higher hills. Furthermore, the eco system model provided by Peltoniemi (2005b), also draws attention to the propensity of the



system, to behave for a length of time in what is described as an almost predictable and linear fashion, and then seemingly ‘tip’ to some new and not necessarily desirable state (Gladwell, 2000). At this tipping or bifurcation point, as the system moves away from equilibrium, the system grows increasingly erratic until a point of stability is found, where a new structure may originate spontaneously (Prigogine and Stengers, 1984; Cramer, 1993). At this point the system may have several paths open to it; in which the choice of path is essentially random, and therefore unpredictable (Hunt, 1995; Capra, 1996). In this context the co-evolution literature has drawn attention to the potential impact through inducing change on other interacting systems, and as such the implications of co-evolution can be considered as challenging the assumption from the Newtonian model (Ansoff, 1965; Learned et al., 1965), that organisations’ are able to predict the environment in a deterministic and extrapolation fashion, which draws attention to the notion of emergence or emergent behaviour (Mitleton-Kelly, 2003).

#### **2.6.2.2 Emergence**

*“If innovation and survival in a changing environment are desirable, then an organisation needs to facilitate emergence”* (Eve Mitleton-Kelly, 2003)

From Peltoniemi’s (2005a) work with the model of the business eco system (figure 2.6), emergence is considered a property, which arises out of the need of the whole of the system, to respond to the changes in the environment. Smith and Stacey (1997, p. 83) also argue that emergence:

*“means that the links between individual agent actions and the long-term systemic outcome are unpredictable”.*

Furthermore, Phan (2004) point to the Santa Fe Institute, as seeing emergence as:

*“a property of a complex adaptive system that is not contained in the property of its parts”.*

As such Peltoniemi (2006) views emergence as the link between the micro and the macro behaviour of the system, in response to the changes in the environment (In this respect Smith and Stacey (1997) point to the behaviour observed from the macro level, as not being obvious from viewing the behaviour of the system from the micro level, which leads to the unpredictable nature between the actions of the individual agents, and the long term outcome of the system. As a result of the induced change on the system, the emergent phenomenon arises from the actions of the agents, which make up the system, and who interact in apparently random ways arising in the emergence of novel and coherent structures and patterns (Goldstein, 1999). These ultimately inform and change the behaviour of the agents and the system itself (Mitleton-Kelly, 2003). One model which encapsulates emergence in light of systems coevolving with each other, is the work of Peltoniemi (2005a), which is shown in figure 2.7.

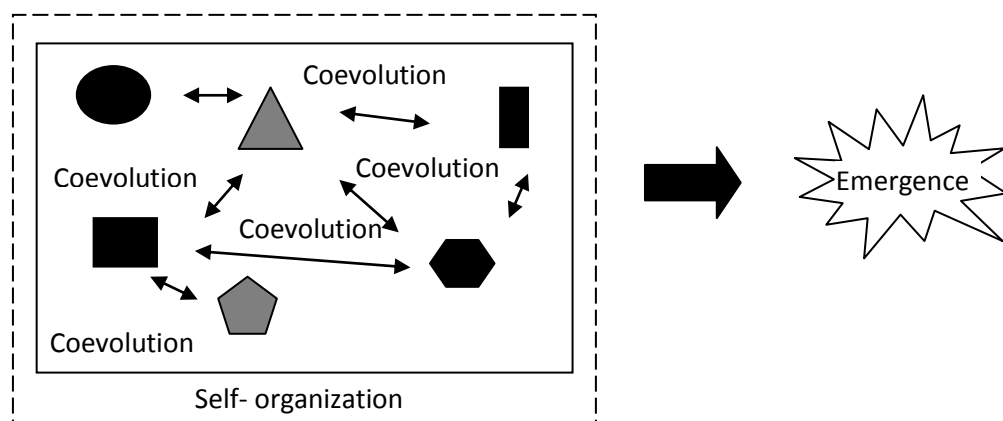


Figure 2.7: Co-evolution, self-organization and emergence in a business ecosystem (source Peltoniemi (2005a, pp. 880-885))

As a result of the different and changed strategies of other organisations', emergence is considered to be induced as a result of the restricted knowledge that the system possess about its environment, in relation to its options and the outcome of those options, which can result in other systems responding with other unanticipated choices (Peltoniemi, 2006). As such, in order to respond to this restriction in the knowledge, Goldstein (1999) outlines the characteristics inherent in the complex adaptive system, that facilitates

emergence, such as non-linearity; self organisation; and far from (or beyond) equilibrium, with adaptive seeking behaviour, as follows:

- **Non-linearity** associated with the initial conditions that the system faces, which focus on the “small cause, large effect” or on the non linearity found in emergent phenomena;
- Complex adaptive systems focus on **self organisation**, to refer to the creative, self generated, and adaptable-seeking behaviour through the interaction and feedback loops, thus the result emerges bottom up; and
- Complex adaptive system theory is interested in the “**far from equilibrium**” conditions that foster emergence. The amplification of random events is a key reason for the emergence to possess unpredictable features.

For the complex adaptive system, the above characteristics are considered to facilitate emergence. They all point to understanding the behaviour of the system through the interactions between the system elements, and between the system whole and its environment; and viewing these interactions as generating non linearity, self organisation and emergence (Stacey, 1995; Anderson, 1999). McCarthy (2004) argues that the adaptable seeking behaviour of the complex system is in contrast to the mechanistic paradigm, which would be typified by reducing the whole system, into manageable individual elements, and where rules are imposed on the whole system. This is in light of a complex system being characterised by non linearity, emergence, and self organisation, which are often considered to be independent of any imposed rules (McCarthy, 2004).

Furthermore commentators Brown and Eisenhardt (1998) also echo Goldstein (1999) “far from equilibrium” conditions that foster emergence, by suggesting that the most effective organisations’, involve strategies that lie at the ‘edge of chaos’ (Pascale et al., 2000). As such the organisational strategy, should evolve rather than being planned (Brown and Eisenhardt, 1998; Goldstein, 1999). Mintzberg et.al. (2003) also point too successful strategies that are

emergent, despite the deliberate attempt to plan them. However, Seel (2003) recognises that the “emergent perspective” in organisational change strategies is a long way off, and that the command and control paradigm in a typically bureaucratic organisation, is still dominant. In contrast to the command and control paradigm, Goldstein (1999) refers to the “informal” organisation, and the spontaneously occurring organisational events, structures, and processes that occur outside of officially sanctioned channels. He suggests that the informal organisation could be considered as authentically emergent. Examples of what Goldstein (1999) calls the informal organisation, may be considered as Google and Semco Limited in Brazil, who proudly state that they have no strategy.

However, Isenberg (1987) in his paper “The tactics of strategic opportunism” would appear to form a divergent perspective, from the authentically emergent strategies. He argues the importance of remaining focused on the long-term objectives, whilst staying flexible enough to solve the day to day problems, and hence recognise new opportunities. Isenberg’s (1987) message would appear to be echoed in the Microsoft case, in which McKinsey (2006) argues that rather than thinking of a strategy as a single plan built on predictions for the future, the key is to think of strategy as a portfolio of experiments, or a population of competing business plans, that evolve over time. This view also echos Mintzberg (1987) who describes the combination of deliberate and emergent business strategies, as “Crafting Strategy”, as a means to overcome an ever changing environment, which is shown in figure 2.8. Although Seel (2003) argues that for an organisation that considers itself to be bureaucratic in nature, a totally “emergent perspective” may be a long way off. Beinhocker (2006) points to organisations’ developing a population of competing business plans that evolve over time, which complement the exploitation and experimentation approach to strategic decision making, as advocated by Boulton and Allen (2004). Therefore the concept of emergence, reinforces the need for a non-linear living system that is far from equilibrium, and hence on the edge of chaos, to allow the organisation to be spontaneous, and self-organising, as a means to overcome uncertainties in the environment (Goldstein, 1999).

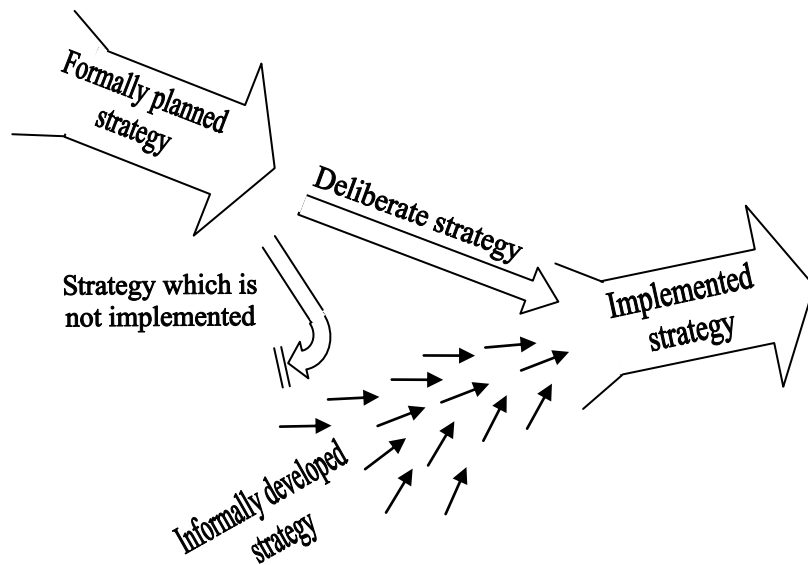


Figure 2.8: From strategy formulation to implementation (source Mintzberg (1987, pp. 66 - 75))

### 2.6.2.3 Self organising

The literature reflects self organisation as a process, in which the creation of new order or what is referred to as new emergent structures patterns or properties, which arise or achieved in the absence of a central controller, from either an external or internal source (Goldstein, 1999; Harkema, 2003 ). Both Stacey (1996) and Gell-Mann (1994) define self organisation as follows:

Stacey (1996, p. 333) states:

*“In organisations, self organisation is the spontaneous formation of interest groups and coalitions around specific issues, communication about those issues, cooperation and the formation of consensus on and a commitment to a response to those issues”.*

Gell-Mann (1994, p. 100) states:

*In an astonishing variety of contexts, apparently complex structures or behaviours emerge from systems characterised by very simple rules. These systems are said to be self-organised and their properties are said to be emergent.*

Furthermore, Ehin (2013) argues that self organisation includes the following features:

- An entity's intrinsic ability to change itself as it interacts with its environment.
- Interactions that produce self –referential patterns, without the need to be designed or managed.
- Evolving patterns, that are both sustained and transformed by spontaneous interactions; and
- Creativity and destruction, as part of the emergent process, as are attraction and repulsion.

From the above definitions and characteristics from commentators Stacey (1993), Gell-Mann (1994), and Ehin (2013), it is possible to argue that self organisation changes the emphasis, from the constructs of planning, organizing, leading and controlling (Taylor, 1911; Fayol, 1949); to a construct which recognises the social dynamics of management and its emergent systems. One model that reflects the social engagement construct apparent from teams and organisations' is that of Ehin (2009) as shown in figure 2.9. In which Ehin (2009) points to the key components of social dynamics as follows:

- Transactions are considered as exchanges of tangible or intangible items between two or more parties, however it is always explicit;
- Conversations, in which two or more people have to exchange ideas and, are explicit under informal circumstances which are considered specific, definable and fully developed; and
- Relationships which are based on spontaneity and as such the relationships are viewed as implicit.

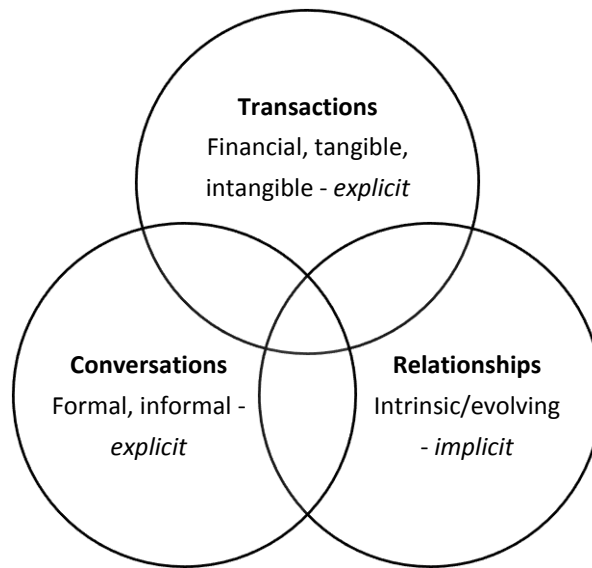


Figure 2.9: Social engagement dynamics (source Ehin (2009, p. 10))

Thus from Ehin (2009, 2013), it is possible to argue that relationships and individual identities are evolving as a result of the biophysical and social context, in which the outcomes are considered unpredictable as a result of the self organising process between the parties involved. In a similar manner the work from Stacey et al. (2000) also points to group identity dynamics as follows:

- We have an inherent need to express our identities and differences as a group;
- A groups identity emerges from the relationships of its members, and not an edict from management; and
- Identities and differences emerge through self organisation or reciprocal interactions.

Therefore, from the work of Stacey et al. (2000) and Ehin (2009, 2013), it is possible to argue, that self organisation portrays or facilitates the ability of the system to promote tacit knowledge, which is considered to come from experience, perception and individual values, and therefore dependent on the context in which it is generated (Haldin-Herrgard, 2000; Davenport and Prusak, 2003). As such tacit knowledge is considered to be a source of

sustainable competitive advantage (Nonaka and Takeuchi, 1995; Ambrosini and Bowman, 2001). The literatures indicate that organisations' are intensifying their search for transferring knowledge among the employees, to prevent the loss of organisational knowledge (Bou-Llusar and Segarra-Cipres, 2006; Murray and Peyrefitte, 2007). Lucas (2002) identifies a number of typical features of the self organised system, which are useful for characterising this phenomenon (table 2.6).

Table 2.6: Features of the self organised system (source Lucas (2002))

|  |  |
|--|--|
| ➤ Fluctuations (searches through options)          | ➤ Dynamic Operation (time evolution)               |
| ➤ Multiple equilibria (possible attractors)        | ➤ Symmetry breaking (loss of freedom)              |
| ➤ Global order (emergence from local interactions) | ➤ Criticality (threshold effect and phase changes) |
| ➤ Redundancy (insensitive to damage)               | ➤ Self maintenance (repair & part replacement)     |
| ➤ Adaptation (stability to external variation)     | ➤ Dissipation (energy usage and export)            |
| ➤ Hierarchies (multiple self organized levels)     | ➤ Complexity (multiple parameters)                 |
| ➤ Absence of centralised control                   |  |

A reasonable question to ask is what does this mean for the management of organisations'?

In answer to this question, from synthesising the work of Stacey (1992), Anderson (1999) and Clippinger (1999), as depicted in table 2.7, it is possible to suggest what the concept of self organisation means (and does not mean) for management. For example, it is possible to argue that self organisation is portrayed through the managers setting the context and the boundaries and which the staff are empowered to come up with the solutions to the indentified problem.



Table 2.7: What the concept of self organisation means (and does not) mean for managers (source synthesised from, Stacey (1992); Anderson (1999); Clippinger (1999))

| Means  | Does not mean   | References  |
|--|---|---|
| It means that managers are responsible for creating the environment and for establishing the self organising learning teams through self selection and challenge. Managers also influence how widespread learning is and the quality of such learning. | Managers do not engineer the solutions, the workers or staff do.                      | Stacey (1992)<br>Anderson (1999)<br>Clippinger (1999) |
| Managers are considered as influencing both the learning and political processes in the organisation.  | It does not mean letting people do what they want to do.                              | Stacey (1992)<br>Anderson (1999)<br>Clippinger (1999) |
| Managers are considered responsible for maintaining the boundaries.  | It does not imply that managers are passive.  | Stacey (1992)<br>Anderson (1999)<br>Clippinger (1999) |
| It means that effective behaviour emerges from the interaction of the staff or agents, and not from the standards, targets and plans defined by management.  | It means that managers do not have control over self organising networks.             | Stacey (1992)<br>Anderson (1999)<br>Clippinger (1999) |
| Managers only intervene indirectly by shaping the environment.   | Managers of the organisation therefore commit to guiding the evolution of behaviours. | Stacey (1992)<br>Anderson (1999)<br>Clippinger (1999) |

As such, the literature has pointed to self organisation, as the process that allows change, whilst maintaining some order, allowing the complex adaptive system to continually adapt, coming close to the “edge of chaos” where creativity and innovation is said to be at its optimal, but pulling it back from plunging over the edge into the disorder, and chaos that signify failure (Harkema, 2003; Stacey, 2007).

#### **2.6.2.4 Edge of chaos**

As referred to in the process of self organisation (Stacey, 1993; Gell-Mann, 1994), commentators typically refer to the systems 'edge of chaos'. This is when the system is considered to be at its most productive state for change, or the permeable intermediate state, through which order and disorder flow (Pascale et al., 2000). In other words, systems that are referred to as on the edge of chaos are considered from the perspective that they are in the intermediate state between chaos, in which the system will cease to function as a system, and equilibrium, in which the system is not in a position to change in response to the environment. Pascale et al. (2000, p. 64) describe the edge of chaos as:

*'when productive agitation runs high, innovation often thrives and startling breakthroughs can come about. This elusive much-sought after sweet spot is sometimes called "a burning platform". The living sciences call it the edge of chaos'.*

Consequently, the 'edge of chaos' is considered important for this study, since it is considered to deal with a key question "of whether an organisation is ready to change". As such, if there is too much stability in the system, the literatures consider that change is unlikely; and conversely if there is too much randomness the literatures point to a system that will not be able to form any new coherent patterns (Holland, 1995; Kauffman, 1995a, 1995b; Bak, 1996). As a result of internal and external events, and choices made by the organisational agents, the system may move away from what is regarded as the equilibrium position, towards a point in which chaotic behaviour is apparent. However commentators point to the 'edge of chaos' in the system, where a new qualitative state is expressed, in the form of emergent behaviour, which can result in novel forms of self organisation occurring and unpredictable behaviour (Beinhocker, 1997).

#### **2.6.2.5 Connectivity**

As referred to through the discussion surrounding the properties of the complex adaptive system, an essential part of the complex adaptive system behaviour, is the notion that such systems exist in changing environments,

and as such the underlying premise is that such systems exist in symbiosis with its environment (Brooks, 2005). As demonstrated through the co-evolution model (Peltoniemi 2005b), how the agents in the system connect, and relate to one another and form connections with the environment, is viewed as critical, to the system's ability to respond to the environment. The concept of connectivity is therefore considered in the internal mechanisms of the system, since systems are considered to be driven by both negative and positive feedback, which is a process by which information generated by an action, is used for the decision-making or regulation process, to affect the next action (Stacey, 1996). As such feedback is classified into positive and negative, depending upon the kind of behaviour that it promotes in the system. Negative feedback guides the system to a certain target, and during the operation of the system, outcomes are compared with the target, feeding information about deviations, back into the decision making process in order to reduce these deviations (Stacey, 1996). In contrast, positive feedback feeds back information, which amplifies the outcomes of the system, by creating a reinforcing loop, and is responsible for amplifying small deviations, in certain variables affecting the system, making it difficult to predict future behaviour (Stacey, 1996). As a result of the connectivity and resulting feedback process, the system can be considered as moving from states of stability and instability, and predictability and unpredictability (Stacey, 1995; Glass, 1996; Fredrick, 1998; McGlone and Ramsey, 1998), which brings the question of the viability of the system, with regard to the variety of behaviour.

#### **2.6.2.6 Requisite variety**

One of the key principles of complexity surrounds the law of requisite variety, which argues that in order for a system to remain viable, a system needs to generate the same degree of internal complexity, as the external complexity it faces in its environment (Ashby, 1956). As such Pascale et al. (2000, p. 20) comments:

*"The survival of any system depends on its capacity to cultivate (not just tolerate) variety in its internal structure".*

The literatures point to the concept of requisite variety as being used in a number of contexts, for example, in terms of the structure of the organisation, in which Espinosa et al. (2007) argues that a top down authority-driven structure, does not provide the requisite variety to ensure adaptation, in comparison to interconnected systems, which are more likely to exhibit the variety needed, to cope with uncertainty and turbulence. Further Chilton and Bloodgood (2010) point to the law of requisite variety, as being synonymous to achieving appropriate access, and utilization of knowledge and data within organisations', in which a diverse set of organisational members are involved in decision making. As such Yolles et al. (2011) point to the variety that is offered through the informal network that interact with the environment, and allow change when necessary. However, the underlying concept of requisite variety may be considered as reinforcing the dangers of equilibrium and hence stagnation of the system over a period of time. This is not conducive for the system's capacity to cultivate, and not just tolerate variety in its internal structure, in response to the variety when introduced from an external source through changes in the environment (Pascale et al., 2000).

The main properties of the CAS paradigm have been discussed and highlighted the complexity through the variety of entities, relationships, rules and behaviours that an organisation can exhibit. As dictated by the aim of the research the following section will discuss the paradoxes that exist between the mechanical and emergent paradigms

### **2.6.3 Complex adaptive system thinking in action**

The previous section (2.6.2) discussed the literature with respect to the main properties of the complex adaptive system, and therefore the following section will discuss what organisations' may perceive as the paradoxes between the mechanical and emergent paradigms. To facilitate this discussion, figure 2.10 which has been adopted from Seel (1999), will be used consider both the mechanistic and emergent paradigms, in relation to an organisations' inability to control; inability to predict; ability to change; living systems, emergence and self organisation; and the ability to learn and be creative and innovative.

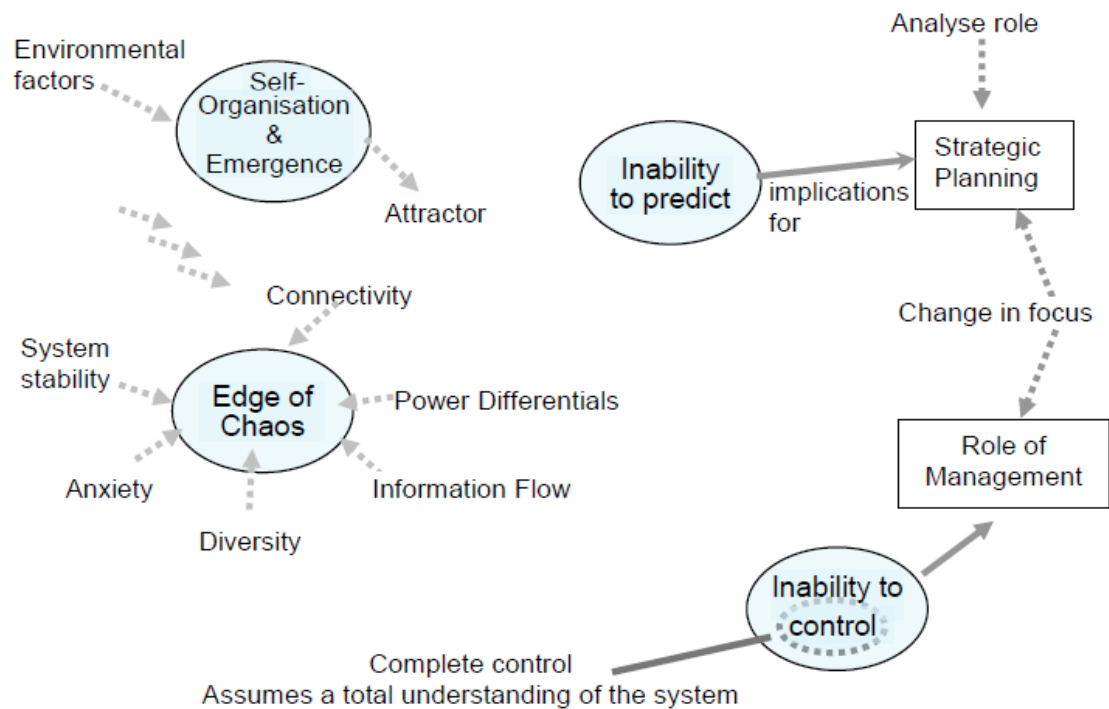


Figure 2.10 Complexity thinking in action (source Seel (1999))

### 2.6.3.1 Inability to control

From Seel's (1999) model, complete control assumes a total understanding of the system. As such it is based on that management, or the few executives at the top of the organisation, are able to control the organisation in a top down fashion. From the literature, the concept of control has been considered in a number of ways. It is possible to argue that control is primarily associated with either maintaining or bringing the system back into equilibrium from the stance of a management process, to ensure the organisation conforms to policy and practice (Fayol, 1949); from the cybernetics systems perspective, control is presented as a process to maintain the system within certain limits using feedback (Flood, 1999); and from an organisational behaviour perspective, management control which is defined as *"the process through which plans are implemented and objectives are achieved by setting standards, measuring performance comparing actual performance and then deciding corrective action and feedback"* (Buchanan and Huczynski, 1991). In this respect Galbraith (1973) defines three forms of control, which he

associates with the mechanistic or mechanical model (Burns and Stalker, 1961). These forms are:

- a. **Rules, Programs, and Procedures:** this approach specifies the necessary behaviours in advance of their execution. This is the simplest form of coordination between interdependent subtasks.
- b. **Hierarchy: Managerial roles:** are used to deal with situations that have not been encountered before, and therefore there are no roles to deal with them. Managers handle the information collection and decision making tasks required by uncertainty.
- c. **Target or Goal Setting:** brings the points of decision making down to the point of action where information originates, increasing the amounts of discretion by employees at lower levels of the organisation. Targets or goals are used to coordinate interdependent subtasks, while allowing discretion at a local subtask level.

In contrast to the mechanistic model of an organisation which can be considered from the perspective of “one size fits all” or controlling the organisation through procedures, rules, regulations, strategy guru Mintzberg (1973), cited in Martinsons (1993, p. 8) comments that:

“Formal planners for treating organisations like expendable and mechanical clocks while assuming they can objectively determine their environments”

In light of the above, the question arises to the extent to which leaders of an organisation are able assume a total understanding of the system, in order to control it?

The CAS paradigm characterises a complex organisation as one which has massively entangled relationships between the agents, and between the organisation as a whole and its environment (Kontopoulos, 1993; Stacey, 1995). As such Drucker (1974) argues that complexity in organisations', limits the ability of the organisation to be controlled, through the difficulties associated in measuring human systems; the multiplicity of objectives; causes

and effects in organisations'; the value-setting character of control mechanisms; and the uncertainty of responses that the control systems can provoke. Beer (1967) also argues that as the complexity increases in the system, outcomes and hence control of the system becomes more uncertain (table 2.8). Furthermore, Lawler (1976) also asserts that there are human problems created by control, through misplaced control which lead to rigid bureaucratic behaviour, in which people behave in order to satisfy the controls, and not necessary for the benefit of the organisation. Controls are also considered as promoting the distortions in the measurement process, and further controls may be viewed as a threat, which may result in resistance by the members of the organisation. Hamel (1996) also argues, that the restrictive nature of these rules and regulations, in which a few senior executives at the top of the organisation set the strategic direction of the organisation, restrict its capacity to be creative and innovative, to overcome what Hamel (1996) refers to as the dynamic environment.

Table 2.8: Complexity of systems (source Beer (1967))

| Categories          | Characteristics   |
|---------------------|---|
| Simple              | <ul style="list-style-type: none"> <li>• Few components</li> <li>• Few interrelations between components</li> <li>• Predictable behaviour (high degree of certainty of outcomes)</li> </ul>   |
| Complex             | <ul style="list-style-type: none"> <li>• Collection of simple systems</li> <li>• Interconnected but with limited interdependence</li> <li>• Degree of predictability diminishes</li> </ul>  |
| Exceedingly Complex | <ul style="list-style-type: none"> <li>• Collection of simple and complex systems</li> <li>• Highly interrelated and interdependent elements</li> <li>• Cannot be described in precise and detailed form (irreducible)</li> <li>• Outcomes are uncertain</li> </ul> |

Whilst Galbraith (1973) asserts that when uncertainty increases, the hierarchy is overloaded, and existing control mechanisms are insufficient, and as such argues, for management to adopt strategies for dealing with increasing uncertainty, such as creating slack resources; creating self contained tasks; investing in vertical information systems; and the creation of lateral relations.

It can be argued that these strategies are closely aligned to the concepts of complex adaptive system theory, such as interconnectedness and the use of slack resources. In this context, complexity commentators such as Allen (1987), Lewis (1994) and Stacey (2003) all point to the control of the system through the agents behaving to a set of self referencing rules, in which the agents are considered as responding to each other's behaviours, as a means to improve the behaviour of the system, in response to the changing environment. This is in contrast to the mechanical paradigm in which linear top down rules and regulations attempt to control the strategic direction of the organisation. The complex system is viewed as exhibiting non linear behaviour, in which the complexity of the system is viewed from the standpoint of the myriad of interacting agents (Mason, 2007; French, 2009). Thus this appearance of the system that on the surface that has more freedom, has what Amabile (1998) refers to as the characteristics which has the capacity to support creativity and innovation, as a means to respond to the inevitable changes in the environment; and overcome the dynamic environment referred to by Hamel (1996). As such it is possible to argue that the absence of control means an increase in freedom, individuality, discretion responsibility and autonomy.

However Stacey (1993) argues that control in organisations' is paradoxical, since on the one hand it is associated with maintaining the system in equilibrium, and on the other hand allowing the system to be flexible and adaptable. In this respect Stacey (1993) asserts that control can be divided into three main approaches, which can be used for different situations. Firstly, control through planning and monitoring is considered suitable for situations of closed change, and is based on negative feedback intended to bring the system to stability. This approach is constrained by organisational intention and is effective only in the short term. In the long term Stacey (1993) argues that using this approach is only a 'fantasy defence to protect managers against the anxiety that uncertainty and ambiguity generate'. Secondly, ideological control is maintained by political and learning feedback loops, where control is maintained by managers through intuition and judgement based on the mental models and the learning process. Here managers use



visions, missions, values and ideologies to maintain the system under control. However when uncertainty is high the possibility of applying power diminishes and anxiety takes over, and where Stacey (1993) argues that this form of control is suitable for closed and contained change situations only. Thirdly, self organising control relies on both positive and negative feedback, and is considered suitable for situations of high uncertainty, of open ended change. In this form of control, Stacey (1993) asserts that:

*'people interact spontaneously forming a system that is self-organising and that their behaviour is amplified leading to overt and covert political actions, unconscious processes, organisational defences and the questioning of shared mental models'.*

In this respect self organisation can be considered through the lens of control, by virtue that it uses feedback connections between discovery, choice and action, and also because self organisation provides boundaries around the behaviour of the system (Stacey, 1992, 1993). As such Stacey (1993) argues that during process of self organisation when system is considered to be unstable, a managers role surrounds influencing the learning and political processes within the organisation, as opposed to the role of control when an organisation is in stable conditions. Barnard (1938) also refers to the restrictive nature of a mechanical system during periods of uncertainty, as a result of the lack of perfect information that the managers, and hence organisation may have about the environment, which can hinder planning. However, as previously indicated, when the environment is stable and known, commentators Boulton and Allen (2004) and Solow and Szmerekovsky (2006) argue, that in order to maximise the output of the organisation, and to prevent poor performance of the system, this notion of controlling and thus exploiting the environment, is viewed as a valid proposition.

#### **2.6.3.2 Inability to predict**

The paradigm implications as shown previously in figure 2.10 (Seel, 1999), points to the implications for the strategic planning role, on the assumption that the organisation is unable to predict the future environment, which leads to the question: Is this proposition valid?

From the planning perspective Mintzberg (1981) classifies definitions of planning into a number of categories:

1. **Planning as future thinking.** This is associated with taking the future into consideration. As such Mintzberg (1981) asserts, that all decision making within organisations' involves looking at the future, and argues that this definition makes the two terms indistinguishable.
2. **Planning as integrated decision-making.** This is associated with integrating decisions across different areas. As such Mintzberg (1981) argues, that this definition lacks specificity since it could also include the entrepreneurial process of visioning and decision-making as a form of planning.
3. **Planning as formalised procedure and articulated result.** This is associated with the systematic, explicit, recoverable thought process, which assists with analysing information, and feeding it into the decision making processes of the organisation. However for the organisation, Mintzberg (1981) argues that this merely defines intentions and not actions.
4. **Planning as programming.** This is associated where planning is used to elaborate on the consequences of the intended strategy, and not used for the intended strategy.

In contrast, proponents of planning argue that planning is a key element of strategy formation (Ansoff, 1965; Porter, 1996; Gaddis, 1997). Although Porter (1996) accepts the limitations to planning, he argues that the organisation, 'extend its uniqueness while strengthening the fit among its activities'. Furthermore, Gaddis (1997) also acknowledges the limitations of planning, and argues that organisations' need a better understanding of their environment. As discussed previously in the strategic context of this study (section 2.4), the literatures indicate that the environment does have the capacity to change, and become uncertain (Emery, 1967; Duncan, 1972; Makridakis and Heau 1987; Courtney et al., 1997), which leads to the question, if the environment does change, why therefore would an

organisation plan and make decisions, that assume that the environment is predictable and stable? Mintzberg et al. (1998, p. 66-67) calls this preference 'the fallacy of predetermination'. He states (1998):

*'to engage in strategic planning, an organisation must be able to predict the course of its environment, to control it, or simply to assume its stability; otherwise it makes no sense to set the inflexible course of action that constitutes a strategic plan.'*

Furthermore, in light of Hewlett Packard's unexpected failure of their mini disk drive in 1991, Christensen (1997) quotes HP as saying "our most serious mistake was to act as if our forecasts about the market were right rather than wrong".

As such one school of strategy development that emphasises the centrality of uncertainty is the learning school. Charles Lindblom's article, 'The Science of Muddling through' (1959), is cited by Mintzberg et al. (1998) as initiating this school. Mintzberg et al. (1998, p. 208) states:

*'The complex and unpredictable nature of the organization's environment, often coupled with the diffusion of knowledge bases necessary for strategy, precludes deliberate control; strategy making must above all take the form of a process of learning over time, in which, at the limit, formulation and implementation become indistinguishable. This learning proceeds in emergent fashion, through behaviour that stimulates thinking retrospectively, so that sense can be made of action.'*

This reference to learning is also apparent from De Geus (1997), who argues that "the real purpose of effective planning is not to make plans but to change the ...mental models that...decision makers carry in their heads". This view also considers planning as a learning process, rather than an aid to control. This inability to predict accurately the business environment and its effect on the organisation is one consequence of viewing a business organisation as a complex system. However, from the above arguments, such a realisation does not mean that the strategic planning process should be completely abandoned. Apart from the fact that the planning process fulfils other roles in organisational life, it may be considered that the focus should be on

monitoring the organisational environment, and not focusing on “accuracy” in prediction (Boulton and Allen, 2004).

### 2.6.3.3 Ability to change

The earlier comment from Minzberg (1994a, 1994b), posited the view that environments are always changing in some dimension. However from the stance that most organisations’ will want to respond to the fluctuations in the environment, a key question often asked in a business organisation is “how do we know if the organisation is ready to change?” Seel (1999) points to a number of key variables, which are presented in table 2.9 and their effect on the readiness and ability of the organisation to change.

Table 2.9: Key variables for change (source Allen (2009))

|  | <b>Stability<br/>(equilibrium)</b> | <b>Edge of chaos</b> | <b>Instability<br/>(Chaos)</b> |
|--|------------------------------------|----------------------|--------------------------------|
| <b>Rate of information flow</b>          | Low                                | optimum              | High                           |
| <b>Degree of diversity</b>               | Low                                | optimum              | High                           |
| <b>Richness of Connectivity</b>          | Low                                | optimum              | High                           |
| <b>Level of contained Anxiety</b>        | Low                                | optimum              | High                           |
| <b>Degree of power<br/>Differentials</b> | High                               | optimum              | Low                            |

The table has been annotated to show the impact the variables would have on the mechanical and complex living system respectively. As discussed previously the traditional perspective of strategy assumes a system in a state of stability and closed change, and where the future environment is considered predictable ( Ansoff, 1965; Learned et al., 1965; Porter, 1980). As such the equilibrium stance of the mechanical organisation which suggests that such organisations’ should “fit” their internal processes to that of the external environment (Barnard, 1938; Ansoff, 1965), is considered too stable to change. This view is echoed by both Nilson (1995) and Brown and

Eisenhardt (1998) who indicate that traditional strategy making, is considered ineffective in turbulent environments, because it is not innovative, creative or original, leading to strategic rigidity, and point to the inability of the organisation to develop alternative strategies when the environment changes. Alternatively the CAS paradigm suggests that for a system to be creative and be able to renew itself, it needs to be in a state far from equilibrium, in which the key variables for change such as the rate of Information flow, the degree of diversity, richness of connectivity, level of contained anxiety, and the degree of power differentials, are considered at their most optimum (Brown and Eisenhardt, 1998; Goldstein, 1999). As a result of the close links that CAS systems places on its environment (Brooks, 2005), the system is considered to develop a variety of responses or 'requisite variety' (Ashby, 1956) as a means to respond to the changing environment. As such the "edge of chaos", or far from equilibrium condition (Nonaka, 1988; Stacey, 1992), is considered the point where the agents or employees of the organisation have optimum connectivity, in which Henry (2001) refers to constant problem solving through the equivalent of cross functional teams. This in contrast to the difficulties associated with the connectivity of a few senior managers in a mechanical system with the rest of the organisation and its environment (Harrison, 1993; French, 2009); which is echoed by Barnard (1938) who argued that a manager's lack of information increased the potential for information uncertainty. Although it is noted that too much randomness in the system, as depicted in table 2.8 may result in the system falling over the edge and would imply the organisation needs to reduce some or all of these variables. In a similar manner if the level of anxiety or control in the system is too contained i.e. through strong control of the regulations, rules and procedures, then the likelihood of any change or creativity will be considerably reduced (Edmonstone, 1990; Harrison, 1993; Amabile, 1998; French, 2009). Alternatively if there is too much anxiety around there could be the possibility of "headless chicken" behaviour. or the building of spurious and unhelpful defences and hence block change (Stacey, 2003; Solow and Szmerekovsky, 2006). As such a system with too much control in the form of high power differentials between different parts of the organisation is likely to

stifle creativity and readiness for change, whilst if the control mechanisms are too weak, then the organisation could go into chaotic behaviour.

#### **2.6.3.4 Living systems, emergence and self-organisation**

If the organisation is going to be able to transform itself, and have the ability to respond to changes in the environment, what does this mean for the organisation if it views itself as a complex adaptive system, and what are the practicalities of achieving this? The literature points to the organisation as a living system, within a network of other complex adaptive systems, in which the dynamics between these systems are viewed as changing in a non linear fashion, in which both evolution and co-evolution are working simultaneously (Stacey, 2003). As such the literatures are portraying an organisation in which the structure has the capacity to allow the agents or people of the organisation to be closely woven (Boulton and Allen, 2004), or at least to foster localised interpersonal relationships throughout the organisation, which some commentators refer to as a lattice or web (Henry, 2001). This is in contrast to the formal and hierarchical reporting structures of the mechanical system (Harrison, 1993). Thus this picture of the organisation, in which the closely woven agents are interacting, communicating, and adapting to each other's behaviours (Boulton and Allen, 2004), is seen to be one which fosters the flow of information from the environment, to all parts of the organisation. Thus reducing the potential for a lack of information from the environment for the managers and hence the organisation, and reduce or eradicate environmental uncertainty (Barnard, 1938). As such it is not inconceivable for an organisation to have relevant information, and hence increase its capacity to respond to the changeable environment (Mintzberg, 1994a, 1994b, 1994c) in a timely manner.

So what enables an organisation to respond to the information acquired?

This may be considered as the ability of the agents of the organisation to respond without referring back to the central control of the organisation and, is referred through the literatures as self organisation (Stacey, 2003) In which authority is delegated to those who have access to the broadest channels of

information (Jenner, 1998), and one in which the organisation has neither too little or too much structure (Brown and Eisenhardt, 1998). As such these commentators would appear to be pointing to a structure that has the capacity to bring members of the organisation together, compared to a highly formalised structure associated with a mechanical system, which points to formalised communication channels, and the potential to limit what commentators refer to as the localised interpersonal relationships. However what is the likelihood and practicalities of an organisation adopting this fluid structure?; is it possible to breakdown the hierarchical structures?; can the organisations' connectivity and communication channels be increased without breaking the structures via the use of the intranet, e-mails, seminars, lectures, and workshops?; and are there any pitfalls to this fluid structure? From the literature, Solow and Szmerkovsky (2006) sounds a note of caution about self organisation, because of the potential for the agents to pursue their own objectives and, thus this idea of "no control" is viewed as an unsatisfactory option, in that this behaviour in its "purest sense" can produce patterns that block change. Alternatively would the informal network overcome any of the issues raised by Solow and Szmerkovsky (2006)? In this respect, Pascale et al. (2000) considers an informal structure as highly adaptive, that moves diagonally and elliptically, skipping entire functions to get the work done. Cooksey (2003) also advocates the tapping into this informal communication channel either minimally or explicitly in order to facilitate information exchange and hence change. However, Pascale et al. (2000) also advises caution with regard to the potential that the informal network can just as easy sabotage best laid plans, by blocking communication and fomenting opposition to change.

In order to foster emergence within the organisation, the literatures (McCarthy, 2004) point to emergence, self organisation and non linearity as products of the individual system element (e.g. agents or people of the organisation), rules and behaviours. As such the complexity literatures (Kauffman, 1993; Fredrick, 1998) point to the living system consisting of agents or people who experiment, explore, self organise, learn and adapt to changes in their environments; where agents are empowered, and where a high level of trust

exists (Yuki and Van Fleet, 1992; DuBrin, 2001; Cooksey, 2003). However Morgan (1986) points out, that the practicalities of achieving this may be problematic in respect of the public sector being risk averse, and the conflict between efficiency and effectiveness. Questions also arise to whether managers will wish to relinquish power and authority and whether the staff will embrace this empowerment? The literatures also point to complex adaptive systems in the purest sense, as one which embraces self organisation (Stacey, 2003) and emergence (Mitleton–Kelly, 2003) as means for the living system to evolve (Stacey, 2003) and respond to changes in the environment, as being rare. As a compromise Mintzberg (1987) advocates, what can be considered as a half way house, in which a portfolio of experiments or a population of competing business plans that evolve over time; and describes the combination of deliberate and emergent business strategies as “Crafting Strategy”. This may be considered as an alternative means of enabling emergent strategies for an organisation, without the need for an organisation to fully embrace self organisation in its purest sense.

#### **2.6.3.5 Ability to learn and be creative and innovative**

In order for a living system to respond to changes in the environment, one of the core components of the complex system is its ability to foster learning, adaptability, creativity and innovative approaches, to respond to the uncertain environment (Allen, 1987; Goldstein, 1999). This is in contrast to the mechanical system where learning is for certainty, and where the systems inputs and outputs are controlled by the CEO / senior managers, to ‘fit’ with what they perceive as the knowable environment (Barnard, 1938; Ansoff, 1965; Harrison, 1993; French, 2009). As such Boulton and Allen (2004), and Solow and Szmerekovsky (2006) both advocate the use of these rational approaches, when both the market and the knowledge is known; in order to maximise the output of the organisation, and to prevent poor performance of the system. Therefore if creativity and innovation are seen as a means to overcome changes in the environment (Wang and Ahmed, 2003), how can an organisation become creative and innovative? Wang and Ahmed (2003) suggest that an organisation needs to unlearn its current methods and beliefs in order to learn; and Cooksey (2003) advocates the questioning of the



fundamental assumptions, processes and practices of the organisation, as a means to stimulate creative solutions and embrace new innovative approaches; and Ridderstrales (2003) suggests that an organisation must fail faster, to learn quicker. However the bureaucratic nature of the civil service in which the context of this study sits, may restrict any attempt by the organisation to embrace any innovative approaches that may put the organisation at risk, due to the civil service code of accountability, and drive for efficiencies.

From the mechanical perspective one could question, how easy it would be for the staff to question their managers on fundamental assumptions and principles? Would staff prefer the status quo? The literature point to an organisation fostering a creative climate (Ekvall, 1996 and Times top 1000 UK Companies survey, 2006), that allows the agents to experiment and take risks. As such Amabile (1998), Smith and Taylor (2000) and Cooksey (2003) all suggest, that in order to facilitate this creative climate; managerial practices should be supportive, and non-controlling. The culture and associated behaviours, which enable agents to adapt, learn, evolve, and be creative and innovative, in association with self referencing (Stacey, 2003), ultimately improve the behaviour of the system during times of uncertainty (Boulton and Allen, 2004; Solow and Szmerekovsky, 2006). This again raises the question to whether managers will wish to relinquish power and authority and whether the staff will embrace this empowerment? The literature also raises questions to whether managers and staff are able to effectively switch roles to accommodate the perceived best behaviours to suit the degree of knowledge and uncertainty of the environment (Boulton and Allen, 2004).

#### **2.6.3.6 Summary and implications for organisations**

This section has highlighted the paradox between the mechanical and emergent paradigm. Key differences have been demonstrated in a number of aspects which include the nature of change, assumptions about equilibrium, casual relationships, the degree of predictability, source of order and competitive advantage. These differences have been summarised in table

2.10. The next section will now review the literature with regard to the models of organisations' that relate complexity and uncertainty.

Table 2.10: Mechanical vs. CAS paradigm

|                                      | <b>Mechanical</b>   | <b>CAS</b>   |
|--------------------------------------|---|--|
| <b>Nature of Change</b>              | <b>Order:</b><br>Assumption that the organisation and environment will remain stable or certain for a long period of time | <b>Chaos:</b><br>Assumption that organisations are in a state of bounded instability, or constant flux.        |
| <b>Assumptions about Equilibrium</b> | <b>Equilibrium:</b><br>Focus on maintaining order and equilibrium   | <b>Far-from equilibrium:</b><br>Focus on far from equilibrium and, adaptability                                |
| <b>Casual Relationships</b>          | <b>Linear:</b><br>Assumption that relationships are linear and follow cause and effect                                    | <b>Non Linear:</b><br>Assumption that relationships are non linear, in which the future is unpredictable       |
| <b>Degree of Predictability</b>      | <b>Predictability:</b><br>Assumption that the system can be predicted with reasonable accuracy                            | <b>Uncertainty:</b><br>Assumption that the future is uncertain or unknowable                                   |
| <b>Source of Order</b>               | <b>Control:</b><br>Assumption that negative feedback can maintain order and coherence in the organisation                 | <b>Self organisation:</b><br>Organisation can maintain order through self referencing.                         |
| <b>Competitive advantage</b>         | <b>Sustainable:</b><br>Assumption that sources of competitive advantage are sustainable for a short period of time.       | <b>Continuous adaptation:</b><br>Organisations keep looking for new sources of temporary competitive advantage |

## **2.7 Models relating complexity and uncertainty**

The previous section highlighted key differences between the mechanistic and emergent paradigms. However the literature also points to a number of models of organisations' that relate environmental characteristics such as change and uncertainty, to the internal mechanisms or what may be regarded as the complexity of the organisation. Three of these models have been presented as a means to select a model for this study that would assist the researcher explore the behaviours of the system, and thereby meet the aim and objectives of this research.

### **2.7.1 Organic v mechanistic organisations**

One of the first models by commentators Burns and Stalker (1961), related the structure of an organisation to environmental characteristics, which were defined through two management systems namely mechanistic and organic. As shown in table 2.11 Burns and Stalker (1961) argue that the mechanistic form is based around hierarchical structure where the interaction between its members are in a vertical manner, and furthermore one which is characterised by controls, rules and regulations, and specialised differentiation of tasks. As such Burns and Stalker (1961) assert that the mechanistic system is more appropriate for stable, unchanging and hence predictable environments. In contrast the organic form is characterised through a network structure of control, authority and communication, in which the emphasis is now on lateral communication, based on information and advice, rather than the mechanistic instructions and decisions. This model highlights important characteristics but does not provide this research with the behaviours in response to the environment.

Table 2.11: Types of management systems (source Burns and Stalker (1961))

| <b>Mechanistic</b>   | <b>Organic</b>   |
|--|--|
| <ul style="list-style-type: none"> <li>• Specialised differentiation of functional tasks</li> <li>• Precise definition of rights, obligations and technical methods</li> <li>• Hierarchical structure of control, authority and communication.</li> <li>• Interaction between members is primarily vertical</li> <li>• Importance of loyalty and obedience</li> <li>• Greater importance of local than general knowledge, experience and skill.</li> </ul> | <ul style="list-style-type: none"> <li>• Adjustment and continual redefinition of tasks</li> <li>• Shedding of responsibility as a limited field rights, obligations and methods</li> <li>• Network structure of control, authority and communication</li> <li>• Lateral rather than vertical communication</li> <li>• Communication consists of information and advice rather than instructions and decisions</li> <li>• Importance of general knowledge and expertise</li> </ul> |
| <div> <div>Stable</div> <div>Unchanging</div> <div>Predictable</div> </div> <div> <div>←</div> <div><b>Environment</b></div> <div>→</div> </div> <div> <div>Unstable</div> <div>Changing</div> <div>Unpredictable</div> </div>   |  |

Furthermore complexity commentators Boulton and Allen (2004) point to (table 2.12) what may be argued from the mechanistic form (Burns and Stalker, 1961), that the linear structure assumes little or no complexity. In contrast the complexity is shown through the argument that parts of the system are interconnected and thereby have an impact on different parts of the system. In this respect Boulton and Allen (2004) assert that the mechanical system is not a true representation of an organisation, because organisations' by their very nature are affected by the outside world through

the exchange of goods and services, and as a result of this interaction are not predictable, and consist of inter related parts that affect each other.

Table 2.12: The differences between a complex and a simple mechanical system (source Boulton and Allen (2004, p. 5))

| Mechanical Systems:  | Living (Complex) Systems  |
|--|---|
| Are not affected by the environment<br>Are predictable and do not evolve<br><br>Can be divided into separate parts<br><br>Behave logically<br>Are comprised of elements that do not learn and change | Are affected by the outside world<br>Do not always follow a predictable path<br>Parts are inter-related; everything affects everything else<br><br>Elements can learn, change evolves and so can the living system. |

### 2.7.2 Coping with uncertainty

A further model presented which is considered a useful perspective for this research, is from commentators Allaire and Fisirotu (1989). This model (figure 2.11) is largely associated with dealing or coping with uncertainty and, broadly revolves around control and prevention (or protection). This model portrays three mechanisms for coping with the uncertainty phenomenon, such as technocratic coping, power response and structural response. The approaches described by Allaire and Fisirotu (1989) are considered suitable for different circumstances, which may be viewed or considered as depending on the level of uncertainty that the organisation is subject to, and therefore the capability of the organisation to control uncertainty. The approaches offered by Allaire and Fisirotu (1989), are as follows:

**Technocratic coping: “Predict and Prepare”** This approach points to the organisation using analytical tools such as forecasting, judgemental prediction, and other corporate planning models (Allaire and Fisirotu, 1989).

|   |      | Level of Uncertainty<br>(volatility and predictability) |   |
|---|------|---|---|
|   |      | Low   | High  |
| Degree of potential Control on<br>source of Uncertainty | High | Technocratic Response<br>(predict and prepare)          | Structural Response<br>(built in insulation and<br>flexibility) |
|   | Low  | Technocratic /<br>Power response                        | Power Response<br>(act to create / control the<br>environment)  |

Figure 2.11: Control and coping mechanisms (source Allaire and Fisirotu (1989))

**The Power Response: “*Don’t predict the future, Control it!*”** Allaire and Fisirotu, (1989) argue that this approach is where the organisation attempts to exert control over events and changes in the environment using power, such as shaping and controlling the environment by passing risk on to others or simply disciplining competitors or using the courts.

**The Structural Response: “*Be ready for whatever it is*”** Allaire and Fisirotu (1989) argue that this approach is suitable for situations of high uncertainty and where the potential for control is low, which leads the organisation to be more responsive, flexible and adaptable to the uncertainty and uncontrollable events of the environment. This may be achieved by the organisation through a broad and diverse base, and by broadening the market scope, through decentralised control and by absorbing the uncertainties over which no control can be applied.

Is this suitable for this research?

Whilst Allaire and Fisirotu (1989) model does not discuss the internal complexity of an organisation, there is a connection between the diverse base of resources and the broad product and market scope associated with IP. These are all elements which increase the complexity, but allow the organisation to be flexible and responsive in situations of high uncertainty and low potential of control. However, it is also possible to argue that Allaire and Fisirotu (1989) model is also similar to other strategies in relation to uncertainty, such as the technocratic coping and the planning strategy; the power approach and control strategy; and the structural response with self organisation.

### 2.7.3 Order from the bottom up

Another model which combines what may be conceived as the internal complexity of the organisation with that of the changing external environment is that from Clippinger (1999). As such Clippinger's (1999) model (figure 2.12) argues that the model "identifies a range of options confronting management in achieving fitness". The internal complexity is defined as the interconnectedness of the organisation; whilst the external ruggedness is defined as the interconnectedness of the environmental factors. The model argues that organisations' can be segmented into four types, of which two are viable, namely the Classical Stereotype and the Catalytic Network, and two are not namely the Byzantine Monolith and the Endangered Denier.

|                     |      | Low External Ruggedness            | High External Ruggedness        |
|---------------------|------|------------------------------------|---------------------------------|
| Internal Complexity | High | i. Byzantine Monoliths             | iv. Catalytic Networks (viable) |
|                     | Low  | ii. Classical stereotypes (Viable) | iii. Endangered Deniers         |

Figure 2.12: Mapping the fitness landscape (source Clippinger (1999))

- i. **Byzantine Monoliths:** Clippinger (1999) asserts that these are organisations' that are over organised in relation to the challenges from the environment, and in this respect are regarded as non viable because they are deemed not to be able to cope with uncertainties from the environment.
- ii. **Classical stereotypes:** Clippinger (1999) portrays these organisations' as simple and well adapted in a stable environment; and as such are considered a viable proposition on the basis that they are adapted to their stable environment.
- iii. **Endangered deniers:** Clippinger (1999) asserts that these are organisations' in which the environments in which they sit are significantly more complex than they can handle; and as such an organisation in this category extinction is virtually certain.
- iv. **Catalytic Networks:** Clippinger (1999) portrays organisations' in which the complexity matches the challenges and uncertainties of the environment, and as such argues that the emergent organisation is the source of continuous innovation and hence adaptability in response to the challenges of the environment.

Is this suitable for this research?

As argued by Clippinger (1999) the model presented in figure 2.12 is considered a vast oversimplification; however for this research it is useful for communicating key concepts from the complex adaptive lens such as self organisation, emergence and fitness landscape. As such the influence of Clippinger's (1999) model can be considered as the dimensions of the internal complexity of the organisation coupled with the external ruggedness of the environment. It is also possible to argue that the limitations that were identified were also useful in the sense that Clippinger's (1999) model encapsulates the holistic organisation in one of the four categories, without necessarily confronting the different parts of the organisation may face



different challenges, and as such may require different approaches. Further Clippinger (1999) also argues that organisations' can be considered as either completely fit or totally unfit, which from the perspective of the categories Byzantine Monoliths and Endangered Deniers if they were not viable then a reasonable question to ask would there be any organisations' populating these two categories?

#### **2.7.4 Complexity strategy matrix**

A further model presented from the literatures is the complexity strategy matrix from complexity commentators Boulton and Allen (2004). The complexity strategy matrix shown in figure 2.13 demonstrates in a simplistic manner the behaviour or what may be regarded as the relationship between the complex system in response to the uncertain environment.

The dimensions of the complexity strategy matrix (figure 2.13), are shown through the vertical axis which is represented by the degree of knowledge strategists and leaders of an organisation believe they have about the market place, or the extent of information they have in relation to competitors, buying patterns, legislation, demographics, or any other pertinent information relevant to the organisations' products and services. The horizontal axis or the degree of stability is the measure that the organisation expects the environment to remain the same for a period of time. The relationship that the system has with the external environment is shown through a number of generic strategies as follows.

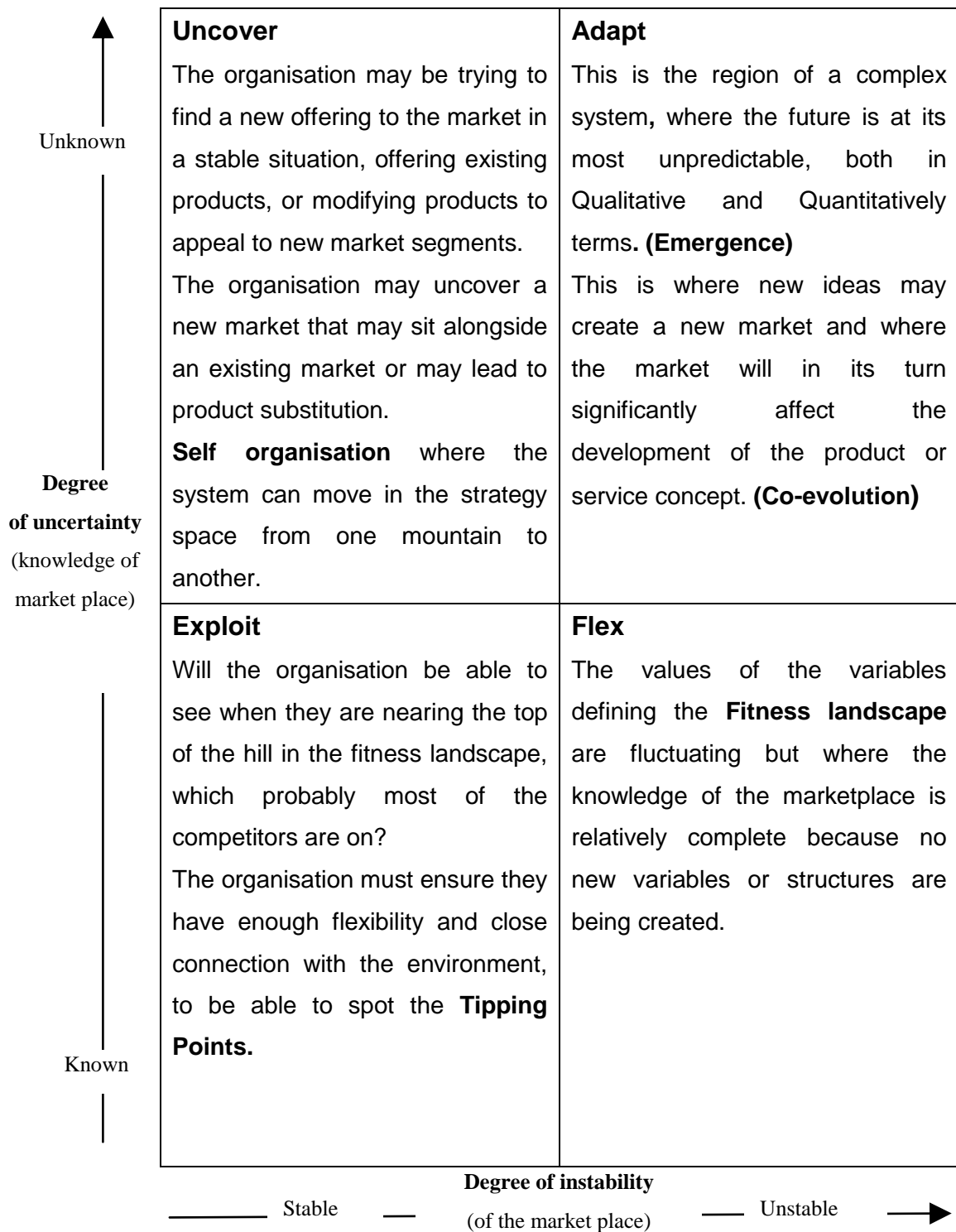


Figure 2.13: Complexity strategy matrix (source Boulton and Allen (2004, p. 10))

### Exploit:

Boulton and Allen (2004) would appear to suggest that this quadrant is reflective of where the degree of uncertainty i.e. knowledge of the market place is known; and where the degree of instability in the market place is considered stable. At this point we can regard the organisation has an abundance of information about the external environment, which Duncan (1972), depicts as primarily the customers, competitors, government regulations and labour unions. In light of this stability, Boulton and Allen (2004) argue that the complex system assumes behaviours close to that of the simple mechanical system, with the exploitation of the optimal path. This may be considered to be reflective of the rational school of thought, previously discussed through commentators such as Ansoff (1965) and Learned et al. (1965), who all point to an environment which is considered knowable and stable, and one in which the future may be predicted on the past, because the behaviours of competitors and customers are considered rational and unchanging (Boulton and Allen, 2004). However, a dilemma that most organisations' are likely to have to contend with, is how long will this cash cow continue? In this respect, the earlier literature from commentators such as Hambrick (1982), Kauffman and Levin (1987); Choo (1996); and Frishammar (2002) all point to the organisation seeking competitive advantage, by uncovering other hills within the fitness landscape to minimise potential threats from tipping points (Gladwell, 2000), such as competitors introducing new products into the market place, or by way of a change in regulation within the industry. These tipping points are described by Gladwell (2000), as the propensity of the living system to behave for a length of time in an almost predictable, linear fashion; and then seemingly 'tip' to some new and not necessarily desirable state. At this bifurcation or tipping point, commentators Prigogine and Stengers (1984) and Devaney (1992) also point to the living system moving away from equilibrium, until a point of stability is found, where a new structure may originate spontaneously.

### Uncover:

In contrast to 'exploit', the degree of uncertainty i.e. the knowledge of the market place, is deemed to be unknown, while the degree of instability of the

market place remains stable. The living system may be viewed as seeking potentially new opportunities, for example searching the fitness landscape for new strategies (Wright, 1932; Kauffman and Levin, 1987), which may involve the organisation modifying existing products to appeal to new sectors, and in such cases the organisation may wish to explore these potential new avenues through research or pilot schemes. Commentators Boulton and Allen (2004) suggest that this is a move of the living system from an existing, to a new strategy, which can be considered as being facilitated by self organisation (Gell-Mann, 1994). Complex adaptive system theory uses this term, to refer to the creative, self generated, adaptability-seeking behaviour of the living system (Goldstein, 1999), in which commentators such as Kauffman (1993) and Fredrick (1998) suggest that creativity, growth and useful self organisation, are at their optimal when the living system is said to operate at the 'edge of chaos'. For Jenner (1998), the key to achieving this self organisation, is through the structure of the organisation, in which he points to flexible basic units having the potential to promote efficient exchanges of information, and where authority is delegated to those members of the organisation that have access to the broadest channels of information, that relate to the problem or issue.

#### Adapt:

'Adapt' is depicted as one in which in the degree of uncertainty i.e. the knowledge of market place, is considered as unknown, and the degree of instability of the market place is considered as unstable. Boulton and Allen (2004) argue that this is where the living system may be at its most unpredictable, and in this sense where both emergence (Seel, 2003) and co-evolution (Mitleton-Kelly, 2003), have the capacity to lead to the creation of new products and services. This unpredictable and emerging nature of the living system has also been identified by commentators such as Brown and Eisenhardt (1998), and Mitleton-Kelly (2003), who refer to the arising of novel and coherent structures that have the capacity to facilitate emergence. Goldstein (1999) also makes reference to the inherent characteristics of the living system that facilitate emergence, such as non-linearity, self organisation, far from (or beyond) equilibrium, and with adaptive seeking

behaviour. In this context, Brown and Eisenhardt (1998) and Mintzberg et al. (2003) echo the “far from equilibrium” conditions that foster emergence, by suggesting that the most effective organisations’ involve strategies that lie at the ‘edge of chaos’, which would appear to suggest in this context, that the strategy evolves rather than be planned. Commentators such as Herbig (1990) and Lewin (1992) also refer to this phenomenon known as the ‘edge of chaos’ where the maximum creativity and innovation occurs. In order to facilitate this creativity and innovation, living system commentators point to the living system (Stacey, 2000) fostering learning, adaptability, creativity and innovative approaches, to respond to the uncertain environment (Allen, 1987; Goldstein, 1999). These denote a creative climate (Ekvall, 1996), which is supported by both Amabile (1998) and Ridderstrale (2003) studies, in which creativity and innovation are facilitated by managerial practices, which support an organisational culture, that endorses experimentation and risk taking (Tettenbaum, 1998). In addition the unpredictability of this “adapt” quadrant may also be considered to be reflective of the interaction of living systems, in which Seel (1999) and Mitleton-Kelly (2003) point to the dynamics between these living systems as constantly changing in a non-linear fashion, with both competition and co-operation working simultaneously, leading not only to evolution, but also to co-evolution.

#### Flex:

“Flex” is considered to be the point, where the degree of instability is considered to be unstable, but where knowledge of the market place is considered to be relatively complete. Boulton and Allen (2004) suggest that the organisation is dealing with uncertainty which they are familiar with, and therefore the terrain of the fitness landscape can be considered as changing, all be it in what might be considered as a known way (Wright, 1932; Kauffman and Levin, 1987). In this context, it may be considered that the literatures are pointing to the complex living system relying on the inherent feedback systems; in the sense, that they will either be promoting or inhibiting change. As commentators Stacey (1995) and Glass (1996) suggest, stability occurs when negative feedback dampens changes in variables, thus pushing the system back to its original state, and producing regular predictable behaviour.

In contrast the system may be viewed as exhibiting chaos, when positive feedback amplifies many small changes (McGlone and Ramsey, 1998). Another concept that would appear to be implied from this quadrant, is the ability of the living system to learn from past experience. In this sense, the literature from Argyris (1977) and Garvin (1993), point to the learning organisation as being one which facilitates the creation, the acquiring and transferring of knowledge; and has the ability to modify its behaviour to reflect the new knowledge and insights (Wang and Ahmed, 2003). This underlying theme of an organisation that facilitates knowledge of all its members is also explicit from Pedlar et al. (1997) and Jashapara (1993), all of whom point to the notion of the learning organisation, as one in which the “learning organisation principles underlie improved performance and sustainable competitive advantage” (Cooksey, 2003).

#### **2.7.4.1 Critique of the complexity strategy matrix**

##### **2.7.4.1.1 External events**

Does the matrix represent a context that is too simplified?

In this simplified context, Boulton and Allen (2004) recognise the contradiction of the model with complexity theory, which suggests a world that is more complex than the two extremes shown by the matrix. It is possible to argue that this simple version does not take account of the description of complexity as the measure of heterogeneity or diversity in the environment, such as the customers, suppliers, socio-politics and technology (Mason, 2007). Further complexity in the environment was also reflected through the diversity through the regulations, institutions and economic events of global markets that affected the level of uncertainty in the banking industry, and the effect this has on the ability of the organisation to influence (Carbonara and Caiazza, 2010). In comparison with other approaches to strategy development contingent on the environment, it is possible to argue that the complexity strategy model demonstrates consistencies with models by Duncan (1972) and Burton and Obel (1998). First Duncan (1972) model, argues that the definition of the environment through stability / instability, which equates to whether the environment is dynamic and considered consistent with the definition of

instability and in terms of simple / complex (Duncan, 1972), which is defined as the number and dissimilarity of external elements relevant to the organisation. Further Burton and Obel (1998) also define four measures from equivocality, uncertainty, complexity and hostility, in which environmental complexity is considered through the number of variables in the environment and their degree of interdependency.

Furthermore Boulton and Allen (2004) simplistic two by two matrix has also been adopted by Bessant et al. (2005), as a means to simply represent an organisations' environment. The quadrants of the matrix in this instance represent innovation processes/strategies, in light of the organisations' degree of knowledge and perceived uncertainty of its environment. Bessant et al. (2005) argue that existing innovation management processes associated with best practice and depicted as 'steady state' strategies, are not suitable when elements of discontinuity come into the equation. In this respect the emphasis is placed on the organisation having an open ended and agile approach to managing an emergent field, in which strategies are difficult to predict in advance (Bessant et al., 2005). Tidd and Bessant (2009) also adopt Boulton and Allen (2004) matrix, as a means to map the 'innovation selection space'. In this respect the variables of the matrix are changed, to show innovation strategies that management may adopt, in response to the degree of novelty of innovation (incremental/radical) on the vertical axis, to the degree of complexity of the environment on the horizontal axis. As such, when the degree of complexity increases, Tidd and Bessant (2009) argue, that it becomes more difficult to predict the path that the innovation should follow. Furthermore, Allen et al. (2005) have also used the simplistic two by two matrix, to express their understanding of complexity through the 'situation matrix'. This has been used to develop an 'activity matrix' for the complex system (Allen et al., 2005). As such, each quadrant depicts a different business process of the complex systems relationship with its environment, both in terms of the short and long term, and the closed and open nature of the environmental dimensions. In this respect, the quadrants of the 'activity matrix' describe the 'evolution' of a complex system through four aspects,

namely production, contingency, sense-making and management (Allen et al., 2005).

#### **2.7.4.1.2 Perception**

The uncertainty literature can be considered as resting upon an assumption that the uncertainty that an organisation experiences arises from the lack of perfect information that managers of the organisation have about the environment (Kreiser and Marino, 2002). The earlier literature indicated that it is possible for there to be differences between individuals and their perceptions and tolerances for uncertainty, or in light of their limited network horizon (Lawrence and Lorsch, 1967; Geersbro and Ritter, 2010). In this respect it is possible to argue that the complexity strategy model also rests upon the perception of managers of the organisation (Lawrence and Lorsch, 1967; Duncan, 1972) and, what is considered as this perceived lack of perfect information (Barnard, 1938) to the extent that this may be considered as having a bounded effect on managers decisions and hence strategic options (Simon, 1957; March and Simon, 1958; Cyert and March, 1963).

#### **2.7.4.1.3 Reaction**

In reaction to the uncertain environment and the perceived limitations of the perceptions of managers of organisations', the complexity strategy matrix draws attention to the behaviour of complex systems as follows:

##### **Limits to predictability**

The previous literature demonstrated that the core behaviour of complex adaptive systems is the notion that there is more than one potential future, in the sense that the system may remain stable for a period of time and then 'tip' at what has been described as bifurcation or tipping points. Thus whilst managers may try to influence or control the behaviour of the system, there is a limit to the knowledge that managers can have about the future, and in this respect what new structures may develop as part of the evolution process. As such this draws attention to the impact that the environmental may have on the system, and the knock on effect this may have on predictability through forecasting and other similar methods.



### **Conditions for innovation and adaptability – the importance of diversity and interconnectedness**

The earlier literature on complex adaptive systems argued that such systems learn, adapt and innovate best when the elements are strongly woven and the diversity within these elements is embraced. This was in contrast to the mechanical paradigm in which behaviours such as control and standardisation were embraced, all of which pointed to an organisation behaved in a fashion such as cogs in a wheel. It is therefore possible to argue that the diversity is embraced through the process of self organisation, in which the system shows the propensity not only to balance top down and bottom up behaviour in response to changes in the environment, but also to engage a diverse selection of the members through cross functional collaboration, which is in contrast to the dangers of ‘silo behaviour’ of control and standardised organisations’. Notwithstanding the simple context described above, it would appear implicit from Boulton and Allen (2004) that it is the strategist and leaders who have the knowledge about the market place, and hence depict which quadrant the organisation may be in. This would appear to reflect the command and control paradigm as shown in the rational school of strategy (Ansoff, 1965), and would appear to contradict the principles surrounding self organisation (Gell-Mann, 1994), where structures and behaviours emerge, as individual agents interact under simple order generating rules. However, during the “exploit”, where the knowledge of the market place is known, and the degree of instability is stable, the control of the agents through the leaders is explicit from Solow and Szmerkovsky (2006) model, to maximise output and prevent poor performance of the system. Conversely this simple measure of market knowledge may be considered as providing an insight to strategists / leaders of mechanical systems, to how a living system may behave in response to the varying degrees of environmental uncertainty. The model may be used as a management tool to provide insights to alternative views and perspectives. For example, in the ‘exploit’ quadrant when the marketplace is stable and knowing, the model highlights the need for the organisation to scan the horizon for tipping points and alternative strategies with the aim of maintaining or increasing their competitive advantage in the medium to long term (Kauffman and Levin, 1987; Gladwell, 2000). However,

the limiting factor of using the model as a management tool, is the 'bounded effect' (Simon, 1957; March and Simon, 1958; and Cyert and March, 1963) of the strategist / leaders knowledge of the market place. This "bounded effect" may in part be attributed to an individual's perspective of environmental uncertainty (Adorno et al., 1950; Lawrence and Lorsch, 1967; Berlyne, 1968; Duncan, 1972; Milliken, 1987), and/or the individual's network horizon (Anderson et al., 1994; Geersbro and Ritter, 2010).

#### **2.7.4.1.4 Summary of complexity strategy matrix**

Although the complexity strategy matrix may be considered as providing a simplistic view of living system behaviours, it does demonstrate that the degree of complexity in the system is what underpins the propensity for instability and uncertainty, in which complexity is viewed as a dependent variable which drives propensity for changes. In this respect the matrix is useful for communicating key concepts from the complex adaptive lens such as self organisation, emergence, fitness landscape, tipping points, co-evolution and the learning organisation, which is representative of the focus of this research. Furthermore the model also serves to argue that the limitations that were identified were also useful in the sense that the model encapsulates the holistic organisation in one of the four categories.

## **2.8 Summary and implications for organisations**

This section has provided a number of models of organisations' that relate environmental characteristics of change and uncertainty to the internal properties. From these models the complexity strategy matrix has been selected to explore the mechanistic and emergent behaviours for this study. The model demonstrates in a simplified manner the different behaviours of the complex adaptive system in response to degrees of uncertainty in the environment. One of the key aspects prevailing from the complexity strategy model is the ability of the complex adaptive system to learn and thereby adapt and respond, and therefore the following section will review the literature in this area.

## **2.9 Learning organisation**

As identified in the previous section one of the key differences that distinguishes the CAS from the mechanical model of an organisation is the propensity of the system to learn as a means to respond to the environment (Gell-Mann, 1994; Stacey, 1996; Anderson, 1999). Furthermore previous work illustrated that CAS behaviours are synonymous with organisational learning (Chiva, 2003). Therefore the notion that CAS are able to adapt and respond through its capacity to learn (Harkema, 2003), is considered relevant at this stage if an organisation is going to transform itself in situations of 'open ended change' (Stacey, 1990, 1992, 1993) by reflecting and learning by their actions in light of unfolding environmental events.

### **2.9.1 Defining a learning organisation**

From the literature a number of definitions on organisational learning are prevailing:

'An organisation which facilitates learning of all its members and continually transforms itself' (Pedlar et al., 1997; Jashapara, 1993).

"a shared understanding of what the [organisation] stands for where it is going, what kind of world in and most importantly how it intends to make that world a reality' (Nonaka, 1994).

An organisation which 'engages in collective learning, to allow the organisation to adapt to the rapidly changing circumstances in the environment' (Cooksey, 2003).

The above definitions would appear synonymous with the notion that the information or knowledge that the organisation receives from external sources, can and will be transferred throughout, which would imply that there is a casual relationship between experiences, interpretations and representations between all members. Therefore the focus of the literature

will be to understand what facilitates or inhibits the learning experience of the organisation.

## **2.9.2 Approaches of the mechanical and organic paradigm**

One model that may be considered as encapsulating the broad differences between the mechanical and organic paradigms is that of Smith and Taylor (2000), as shown in table 2.13. This is considered relevant, as it relates to the context of the civil service in which this research is carried out. One of the key differences identified through the Smith and Taylor (2000) model is the differences between the formative relationship with the environment of the learning organisation and the reactive of the civil service. So how does this translate itself?

### **2.9.2.1 Learning to unlearn**

Argyris (1990) and Cooksey (2003) refer to the single loop learning process, being driven by negative feedback, that has the effect on the organisation of seeking equilibrium and stability; and double loop learning which has the benefit of not only negative, but positive feedback. This double loop learning is viewed as creating at least short term instability, and the likelihood of stimulating the creative generation of alternative solutions to solving problems, in which fundamental assumptions and goals of the organisation are questioned. However Argyris (1990) asserts that double loop learning in organisations' is rare, which would appear synonymous with Wang and Ahmed (2003) model shown in table 2.14.

Table 2.13: The difference in approach between a learning organisation and a civil service organisation (source Smith and Taylor (2000, p. 196))

| <b>A learning organisations approach - A Civil Service approach</b> |
|---|
| <b>Top Managers behaviour:</b>                                      |
| Learning role models - Anti-learning                                |
| <b>Relationship with the external environment:</b>                  |
| Formative - Reactive  |
| <b>Conductive structures:</b>                                       |
| Flexible teams - Status bound                                       |
| <b>Fitness of work processes:</b>                                   |
| Continuous review - Unchallengeable                                 |
| <b>Managers role:</b>   |
| Facilitation - Close control  |
| <b>How information is found and used:</b>                           |
| Captured and shared - Opportunistic and lost                        |
| <b>Learning climate:</b>  |
| Self development through work - Training for certainty              |

This model views an organisations' ability to adapt, evolve and transform itself to changes in the environment, being not only dependent upon the ability of the organisation to learn, but to unlearn, and hence abandon its current methods and beliefs with sentiments such as 'its always been done like this'. In this respect, Wang and Ahmed (2003) "new focus" suggests that an organisation that embraces "triple loop learning", will have the effect of constantly questioning and confronting existing processes and practices, by adopting new innovative approaches, which can be considered as reflective of the practices of a complex and adaptive system (Herbig, 1990; Lewin, 1992). These creative and innovative approaches, together with this ability to unlearn existing practices, can be viewed as preventing the organisation from falling over the "edge" in times of change (Kauffman, 1993; Fredrick, 1998; Goldstein, 1999).

Table 2.14: New focus in organisational learning (source Wang and Ahmed (2003, p. 8-17))

| <b>Mechanical Systems Approach</b>   | <b>New Focus</b>  |
|--|---|
| <ul style="list-style-type: none"> <li>• Single loop and double loop learning.</li> <li>• Knowledge accumulation, retention and creation through incremental changes.</li> <li>• Systems thinking.</li> <li>• Continuous improvement in organisational performance.</li> </ul> | <ul style="list-style-type: none"> <li>• Triple loop learning and unlearning.</li> <li>• Knowledge creation through radical changes.</li> <li>• Creative thinking.</li> <li>• Creativity and innovation.</li> </ul> |

#### **2.9.2.2 Knowledge creation**

The implication from the cognitive schemata of the agents is that the agents contain individualized elements of tacit and explicit knowledge (Harkema, 2003). As such Nonaka (1994) defines explicit (or codified) knowledge, as knowledge that is transmittable in formal systematic language; and tacit knowledge as having a personal quality, which makes it hard to formalise and communicate; and is deeply rooted in action, commitment and involvement in a specific context. A model which exemplifies the non linear and highly localised and social interpersonal relationships through the self organisation process is shown in figure 2.14. Nonaka and Takeuchi (1995) argue, that the key to releasing knowledge in the organisation, lies in the social processes which are referred to as “knowledge conversion”, or through what is deemed as knowledge creation, which lies in the conversion of tacit to explicit knowledge (Senge et al., 1994; Harkema, 2003).

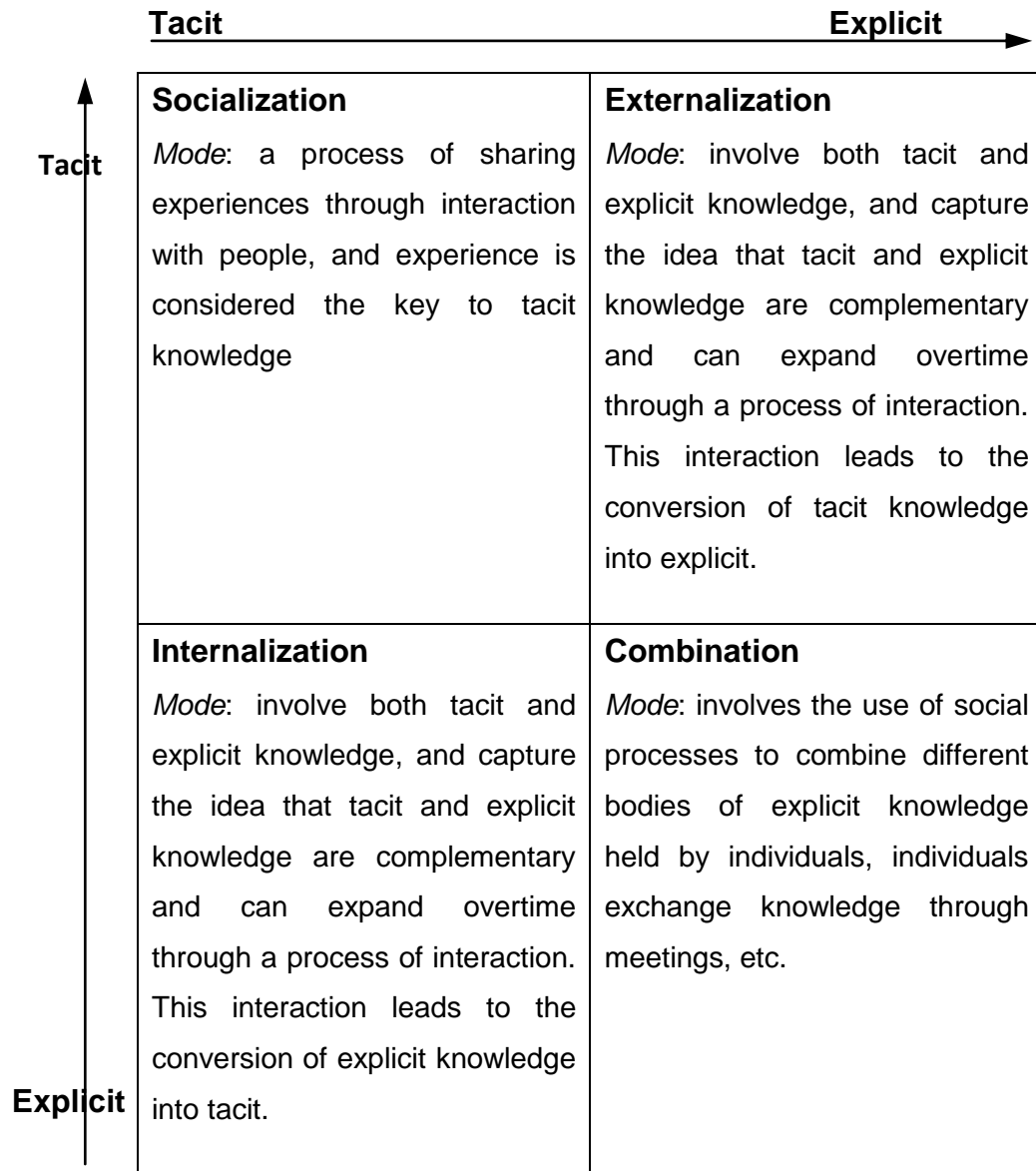


Figure 2.14: The modes of knowledge conversion (source Nonaka and Takeuchi (1995, p. 57-72))

### 2.9.2.3 Creativity and innovation

*You don't have to be a genius – In the right environment anyone can be Creative” (Jing Zhou, Rice University, 2003)*

A key difference between the organisation learning paradigms that is explicit from Wang and Ahmed (2003) model is the notion of creative thinking. But how does the organisation foster this thinking?

A Future-Think 2006 Innovation Tracker Survey (2006) concluded that; organisational climate is the most important attribute to fostering creativity and innovation. The report contends that just tasking a team to 'be creative' will not result in creativity and innovation its having a corporate climate that gives people the space to experiment and take risks that truly sustains it. This view reinforces the findings of Ekvall (1996) Creative Climate model. Ridderstrales (2003) study also echoes this view that innovation requires a culture that supports experimentation, and risk taking; and therefore the innovative environment must have a high tolerance for mistakes. Ridderstrale (2003) also suggests that organisations' must fail faster, to learn quicker and succeed sooner, and remember that the only way not to fail is not to try.

In light of the above context, it is reasonable to suggest that managerial practices need to facilitate this creative and innovative climate; and hence knowledge creation. As such Amabile's (1998) model shown in figure 2.15 identifies the managerial practices that organisations' may adopt that influence the creative capacity of its employees, such as flexibility, autonomy non-controlling supportive leadership, feedback, playfulness and ideas. These managerial practices will enhance the organisations' ability for breakthrough innovations that involve unexpected and unplanned leaps of creativity and insights necessary to facilitate open-ended change. This is in contrast to routine (repetitive) tasks that stifle creative thinking and the formation of new knowledge (Nonaka, 1994).



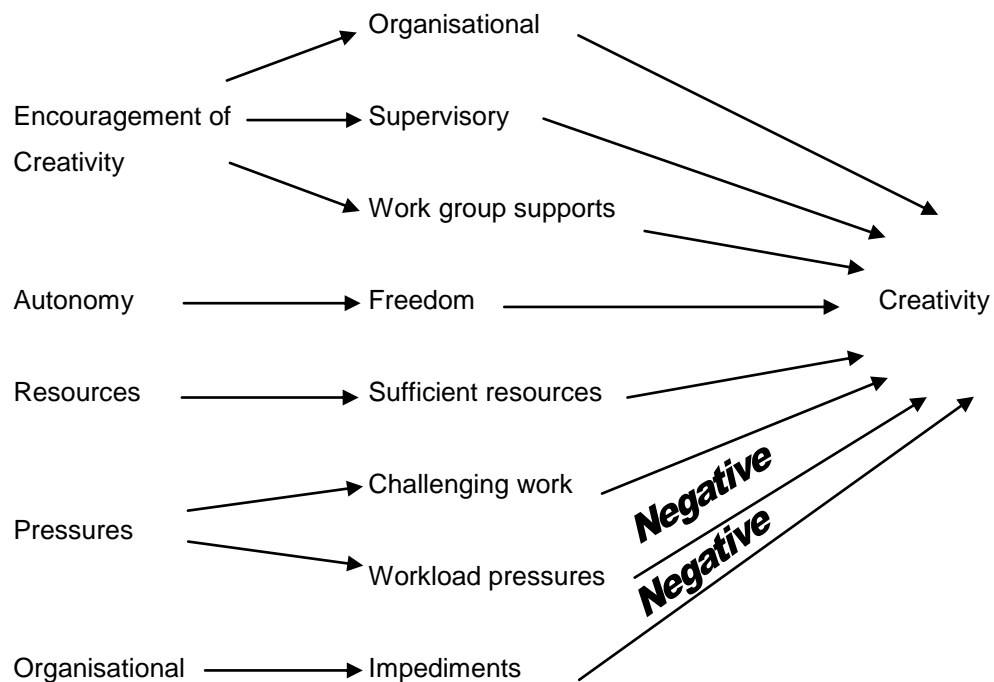


Figure 2.15: Categories of managerial practices that effect creativity (source Amabile (1998, pp. 77 – 87))

#### 2.9.2.4 Individual learning and creativity

McHugh et al. (1998), indicate the need for a learning organisation to encompass “the involvement of all”. Pfeffer (1995), also echoes this view, and emphasises the development of a workforce that cannot be readily duplicated, as a means of seeking competitive advantage, in comparison with product differentiation, which once achieved will quickly erode. Buckingham (2001) also points to organisations’ failing to develop the workforce, and capturing the hearts and minds of their employees, and suggests that more than 80% of employees are not engaged in work. Ridderstrale (2003) argues that organisational success is about capturing the emotional human being, and believes it is a time to start re-energising organisations’, and thus enable change in a brain based organisation, rather than re-arranging the organisational structure. In summary, Amabile’s (1998) “How to kill creativity “ model, conceptualises the point where an individual’s creativity is at its greatest, where their expertise, creative thinking skills and motivation overlap, as shown in figure 2.16.

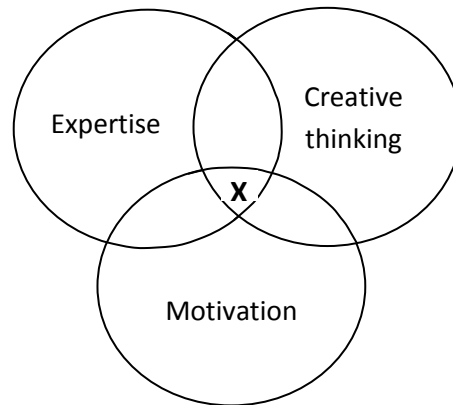


Figure 2.16: The three components of creativity (source Amabile (1998, p. 77 – 87))

#### 2.9.2.5 Learning and organisational structure

From the above models, and the previous definition of CAS which at the heart is formed by agents (Holland, 1998), it is possible to link the structure and the culture of the organisation, together through the mental modes of the agents, because as such they determine how the learning process will evolve through the non linear, dynamic, emergent and self organising behaviour. In this respect commentators, such as Morgan (1986), Harrison (1993), Franklin (1997), Wallace (1997), and Boulton and Allen (2004), have attempted to identify organisational structures that influence creativity and innovation. These commentators may be considered as attempting to address the previous literatures, that refer to the notion that organisations' need to keep a constant flow of ideas, if they wish to compete through added value factors (Kao, 1997); facilitate the transfer of knowledge, which is considered as playing a key role in the organisations' ability to be creative and innovative (Nonaka and Takeuchi, 1995); and reduce potential organisational impediments, which are shown as having a negative effect on creativity in Amabile's (1998) model, as shown in figure 2.15. Commentators such as Morgan (1986), Harrison (1993) and Boulton and Allen (2004) summarise the mechanical system as one which consists of a fixed hierarchical structure with vertical communication channels, where control and authority is centralised, with clearly defined tasks and obedience to supervisors. In this respect Wallace (1997) commenting within the context of the capability of public

services to adopt the notion of a learning organisation, argues amongst other factors, the prominence of fixed structures places an expectation on employees to act rather than learn, and as such prevent the application of the concepts of a learning organisation. Furthermore, this relationship between organisational structure and employees of the organisation, is a key theme from the literary work of Franklin (1997), and echoed by Murphy and Blanter (1997) and Wallace (1997), who contend that one of the key determinants of an organisations' learning capability, is its ability to foster highly localised interpersonal relationships throughout the structure of the organisation. Edmonstone (1990) drawing upon Morgan (1986), also refers to the hierarchy of fixed roles, and centralised control and authority as potential inhibitors to the public sector; and refers to the uncertainty and conflict, with regard to messages from the political hierarchy, such as, "to be effective and efficient as the private sector purportedly is but to maintain the public service ethic and public accountability", which may be considered as highlighting the common view of the public sector being risk averse. Ehin (2013) also argues that as long as the organisation has any sort of hierarchical structure as shown in figure 2.17, it is still regarded as a controlled access system.

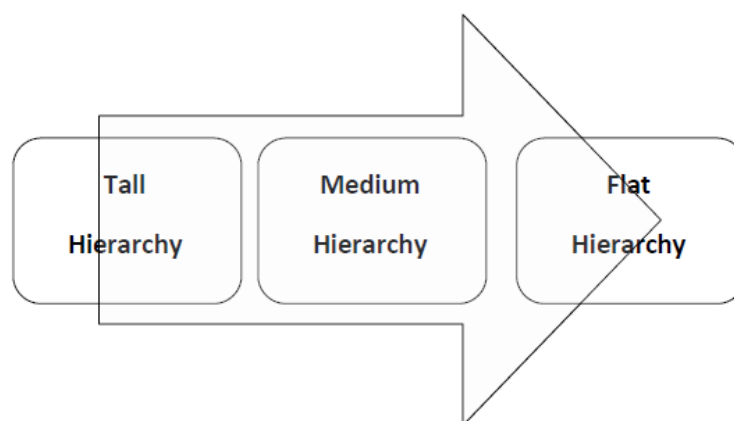


Figure 2.17: Tall, medium and flat hierarchy (source Ehin (2010, p. 197))

However, as a means to foster the key relationships identified by Franklin (1997), Murphy and Blanter (1997), and Wallace (1997), commentators William and Yang (1999), point to a flatter organisation structure that optimises open communication between individuals and teams, which in turn

encourages continuous learning, as well as supportive leadership, that have an open mind towards change. Gore (1976) also refers to this flatter type of structure as a 'lattice', where lines of communication are considered to be person to person with no intermediary, or fixed authority, which is viewed by Henry (2001), as a characteristic of an organic structure. This type of structure is considered as having the effect of constant problem solving through the equivalent of cross functional teams or quality circles, and was shown to be adaptable in times of crisis as Gore (1976) expresses, "there was no rigid management hierarchy to conquer, before the problem was attacked". This organic type structure is also exemplified by Henry (2001), who uses the example of the construction of a termite mound. In this respect a termite mound consists of numerous balls of mud, in which each ball is covered with a chemical attractor by a termite. Initially there is no pattern to the droppings, however, each termite places their ball of mud where the smell of the attractor is strongest, with the stronger smelling piles getting larger, and rising to form the distinct columns and arches of a termite mound. What becomes apparent from this system is that there is no leader, design, plan or coordination through a hierarchical reporting structure; but independent agents following a few simple rules that interact in an organic manner. These principles also form the basis of an organic structure of a self organised system as described by Waldrop (1993), Wheatley (1993), Gell-Mann (1994), Lewis (1994), Stacey (2003) and Boulton and Allen (2004). These commentators describe the characteristics of an organic, self organised system as one which exhibits a decentralisation of authority, where tasks are loosely defined, communication channels are both vertical and horizontal, and where individuals have greater authority, flexibility and adaptability. As such the emphasis is placed on giving individuals more freedom, which has the capacity for allowing individuals to build trusting and meaningful relationships. These organic characteristics are prevalent of a learning organisation as previously identified by commentators such as Smith and Taylor (2000) and Cooksey (2003).

### 2.9.2.6 Formal and informal networks

Whilst the commentators would appear to be promoting this idea of an organic structure, to facilitate the concept of the learning organisation, Pascale et al. (2000) drawing upon Brown and Eisenhardt (1998), draws attention to organisational structures that tend to coalesce over time, with the formalisation of power centres and interactions; and re-organisations' are often not enough to break down the formalised interactions in order to exploit innovation and entrepreneurial initiatives. In this regard Brown and Eisenhardt (1998) promote "patching" where new organisational units are created, merged and redefined to foster "initiative"; in order to achieve flexibility the units are partially defined to allow the structure to co-evolve with existing business units. As an alternative to "patching" Pascale et al. (2000) calls for managers to harness the informal structure of their organisation, as a means to revamp their formal structure; where informal structures are considered as highly adaptive, that move diagonally and elliptically, skipping entire functions to get the work done, as demonstrated by Ehin (2010) in figure 2.18.

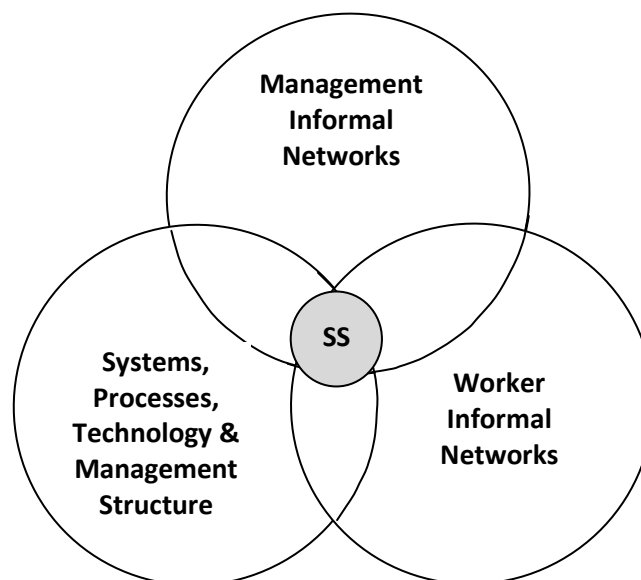


Figure 2.18: Organizational sweet spot (source Ehin (2010, p. 197))

The informal structure is considered the "central nervous system" to the formal or "skeletal" organisation; and is considered as driving the collective thought processes, actions and reactions of its business units, that kick in, when

unexpected problems arise. Pascale et al. (2000) concludes that this informal complex web of social ties from the interaction of colleagues can solidify over time into surprisingly stable networks. However, as shown in figure 2.19

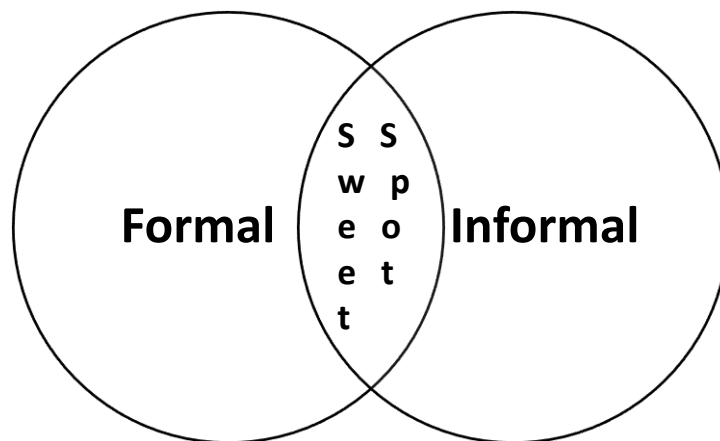


Figure 2.19: Management informal networks, worker informal networks, and systems, processes, technology and management structure (source Ehin (2009, p. 15))

the organisational sweet spot may be regarded where the informal relationships and friendships, meet with the formal elements of the organisation through the systems processes, technologies and structure overlap or which is viewed as the “meeting of minds” over the goals, policies and processes (Ehin, 2013). However Pascale et al. (2000) advises caution with regard to informal networks, in that they can just as easily sabotage best laid plans, by blocking communication and fomenting opposition to change. In this context a number of commentators such as Argyris (1990), Field (1997), Henderson (1997), Steiner (1998) and March and Levinthal (1999) go some way in answering this question, by pointing to barriers and impediments associated with trust that is tied with the managers and leaders of the organisation, that prevents the organisations’ ability to foster highly localised interpersonal relationships throughout the structure of the organisation, and

hence promote learning, innovation and creativity (Franklin, 1997; Murphy and Blanter, 1997).

#### **2.9.2.7 Summary and implications for organisations**

This section of the literature has provided theoretical propositions regarding the propensity of the system to learn, as a means to respond to the environment. The models provided to support this proposition, have centred on the relationships between the agents and the climate of the organisation, as a means for the system to transform itself, through learning by their actions in response to unfolding environmental events. As with this research, there is evidence that one of the central issues that organisations' face is the ability not only to learn from past mistakes, but also to challenge some of the managerial practices, that may be preventing the conversion of knowledge into tangible open ended change, for both the individuals concerned and the organisation. The chapter summary will now follow, which will provide an overview of the theoretical propositions, in relation to the aim and objectives of the study.

### **2.10 Chapter summary**

This chapter has introduced the literature used to pursue the research aim and objectives of this study. It has considered the post classical theoretical framework, in which the complex adaptive system paradigm sits, and the implications for organisations'. The literature reflected the strategic context of the study through the dimensions of strategic uncertainty, since there is evidence to suggest that the external environment is changing, as a result of a number of factors which include globalisation, and technological changes; all of which is creating an uncertainty with regard to what the future environment will look like, and the impact such changes will have on the organisation. The topic specific addressed the main properties of complex adaptive systems, which emphasised the interrelationship and their interdependent nature. The detailed application of the literature used the identified complexity strategy matrix for the study, to demonstrate the mechanistic and emergent behaviours of the system. A key aspect of the literature addressed the ability of the

complex living system to learn. The complex adaptive system perception can be enhanced, if managers are conducive to the literature that underpins this paradigm, in which the complexity inherent in the system, has been shown to negate the ability of managers to control, but to facilitate the internal mechanisms of the organisation that allow the agents of the system, to respond with the aid of simple rules to changes in the environment. Several key areas in the complex adaptive system theory, illustrate the importance and timeliness of this study. The literature explicitly points to organisations' needing to accept that they are not a closed island to the changing environment, and as such, the strategic notion that organisations' are able to plan long term objectives, in times of change and uncertainty has been shown as a minimum to be limited or floored, as a means to define the future behaviour of the organisation.

Following this chapter's review of the theoretical perspectives and framework in which this study is conducted, the remainder of the thesis examines complex adaptive system theory in practice. As such, Chapter 3 details and justifies the research philosophy, strategy, methods adopted and the practical aspects of the study. This chapter also discusses the data collection and analysis techniques employed. Chapter 4 presents the analysis and findings for the study, and Chapter 5 provides the discussion of the findings, and Chapter 6, provides the conclusions and the contribution this research has made to knowledge and practice, and identifies directions for further research.



## **3.0 Research Methodology**

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### **3.1 Introduction**

To meet the aim and objectives of this research, the researcher dedicated the previous chapters to provide an introduction to the research (Chapter 1), and a review of the literature on CAS theory (Chapter 2). This chapter details and justifies the research philosophy, strategy, and methods of data collection adopted and the practical aspects of the study. This chapter also discusses the data collection and analysis techniques employed.

To establish the chosen methodology for this study, the research 'Onion' shown in figure 3.1 (Saunders et al., 2007, p. 132), has been used to provide a structure for the research (Robson, 2011). As such the structure of this chapter is as follows:

1. Examines the research philosophies and approaches available.
2. Examines the research design options available and the method(s) used for gathering and analysing the data.
3. Examines the operationalization of the research questions.
4. The chapter concludes with a summary of the chosen design and the practical aspects of the study, which have arisen.

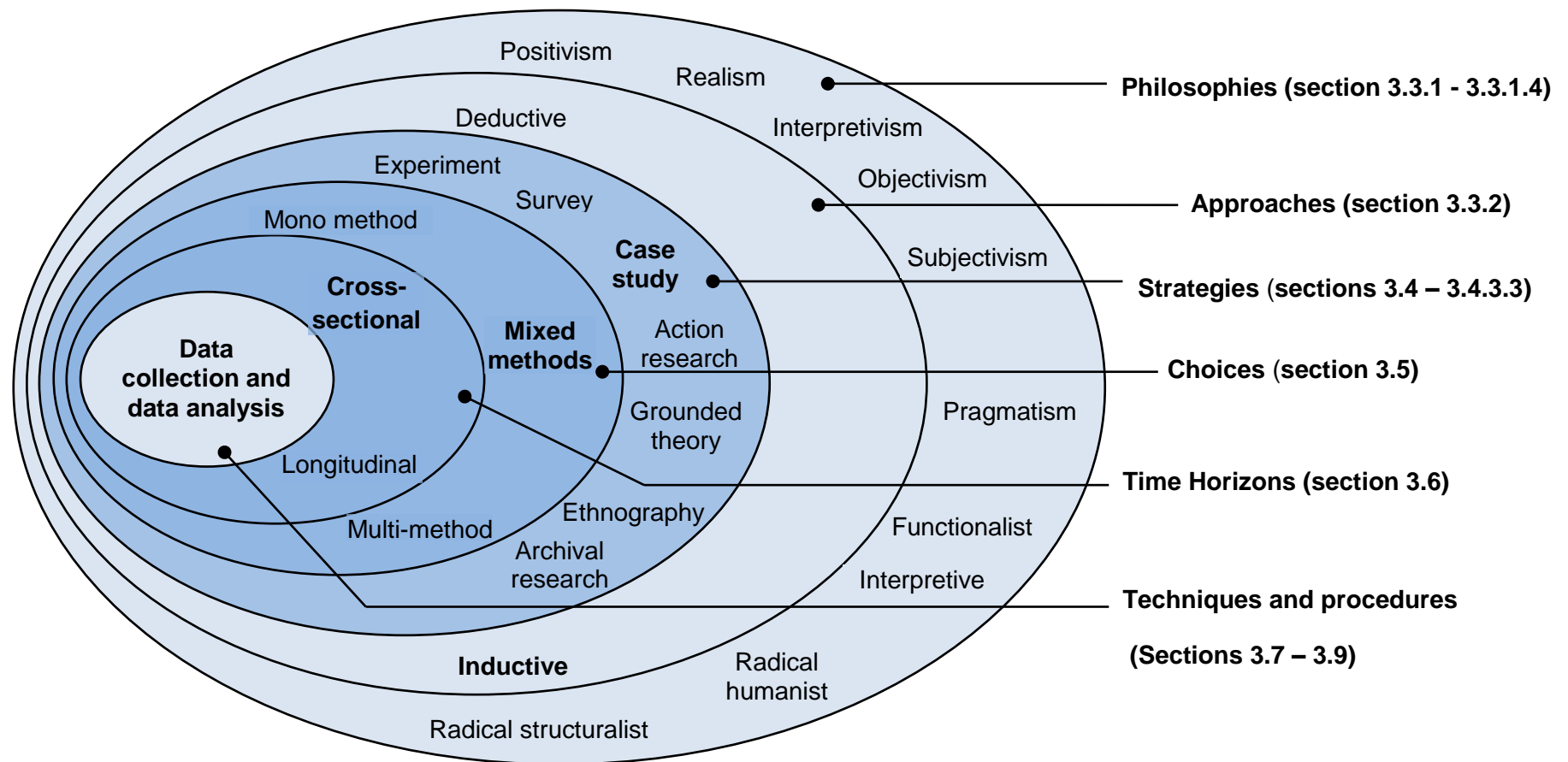


Figure 3.1: The research 'Onion' (source Saunders et al. (2007, p. 132))

## **3.2 Research purpose**

Research in simplistic terms, seeks to answer questions, or can be considered as taking place to facilitate the discovery of meaning or new knowledge (Grinnell, 1993). Saunders et al. (2007) point the researcher towards thinking about the purpose of the study in terms of the research question and objectives that need to be answered and classify research projects as:

- i. Exploratory studies (What is happening and to seek new insights);
- ii. Descriptive studies (Accurate profile of events and situations);
- iii. Explanatory studies (Establish casual relationships between variables).

Classification of this study is closely aligned to an 'exploratory' study, since the essence of the aim and objectives, was to investigate 'what is happening' 'to seek new insights' and ask questions as a means to assess the phenomena.

## **3.3 Philosophy and approach**

### **3.3.1 Philosophy**

From the research literature some writers argue that the way the researcher views the world, and the assumptions and basic beliefs that guides the investigation or study, has important implications that underpin both the strategy and the methods adopted to achieve the aim and objectives of the study (Saunders et al., 2007; Wilson, 2014). Moreover, Saunders et al. (2007, p. 101) point out that the research philosophy reflect "the way we think" about the development of knowledge or epistemology, which in turn affects "the way we go about doing the research". Easterby - Smith et al. (2002) portray three reasons why an understanding of philosophical issues is useful:

1. It can help in clarifying research designs.
2. Knowledge of philosophy can help the researcher recognise which design will work and which will not. It should enable a researcher to

avoid going up too many blind alleys and should indicate the limitations of particular approaches.

3. Knowledge of philosophy can help the researcher identify, and even create designs that may be outside his or her past experience. And it may also suggest designs according to the constraints of different subject or knowledge structures.

As such the researcher needs to have an understanding of the knowledge of philosophy in light of the impact of the researcher's perspective of knowledge on the study.

#### **3.3.1.1 Epistemology**

One facet of this philosophy from the research literature is that of epistemology which is concerned with the study of knowledge; and what is accepted as being valid knowledge (Collis & Hussey, 2009). Commentators have concluded that the basic beliefs or the view of the world that the researcher has about the study, is of primary importance (Guba and Lincoln 2005; Saunders et al., 2007; Robson, 2011). As such, the scientific and management epistemologies (Palmer and Parker, 2001), is concerned with knowledge gained from the quantitative scientific methods (French, 2009), in contrast to what is regarded as the qualitative knowledge, which may be gained from the researcher's interaction with the agents or people of the organisation (Gummesson, 2006). These interactions between the researcher and the subject of the research, is clarified by Smith (1983) who comments "In quantitative research facts act to constrain [the researchers] beliefs; while in the interpretative research [the researchers] beliefs determine what should count as facts."

#### **3.3.1.2 Ontology**

A further facet that is evident from the research literature is that concerning the ontological dimension, or the understanding of the relationship between knowledge and the nature of reality (Hussey and Hussey, 1997; Saunders et al., 2007; Akehurst et al., 2011). The ontological dimension of the study, may

be considered as raising question, as to what assumptions the researcher has about how the world operates. The two aspects of ontology are considered as objectivism and subjectivism. Objectivism is portrayed as social entities that exist in reality, external to the social actors concerned with their existence. In contrast the subjectivism view where the social phenomenon is created from the perceptions and actions of the social actors concerned with their existence (Saunders et al., 2007; Wilson, 2014). Similarly Ringwald (2008) uses the metaphor of a football match, where the position of the researcher in relation to that which is being researched, may be viewed from the perspective of: Pundits, (pre, mid and post match); Match commentator; Managers; Coaches; Fans; and Players. The position of the researcher in the above can be likened to that of a player, who will not see the game from the same position as other parties; and therefore the limitations of the position adopted by the researcher, must be taken into account.

#### **3.3.1.3 Axiology**

Another branch of knowledge philosophy that is evident from the research literature is that of axiology and as such is concerned with the role of the researcher's values, and the basis for making judgements in all stages of the research (Wilson, 2014). Thus for those researchers that take on what may be considered as a conventional scientific approach, believe that such research must be free of values in order to be valid. As such it is necessary for the scientist to approach their research in a neutral and objective manner. In contrast interpretivists argue that it is impossible for research to be completely free of personal values, as research is always biased towards the values of the researcher. As such for interpretivists, these biases are sometimes so entrenched in the researcher's culture, that they can go unnoticed during research (Saunders et al., 2007).

#### **3.3.1.4 Position of researcher**

In light of the previous discourse surrounding the philosophical dimensions of the study, the underlying determinants of the adopted philosophy was the research aim and associated literature (Tashakkori and Teddlie, 1998), in contrast to the researcher following personal preferences, which may result in

the validity and reliability of the study being compromised (Eisenhardt, 1989; Perry, 1998). The literature review conducted in the previous chapter pointed to the behaviours of the organic or CAS model of an organisation that are manifested through the agents of the organisation which were reflected through the social perspective of human interaction (Brooks, 2005). As such the nature of the research dictated that the researcher needed to find out the feelings and perceptions from the agents, and hence the epistemological dimension of the study was dictated through the qualitative and interpretive knowledge obtained from the researcher's interaction with the agents (Gummesson, 2006), compared to the scientific epistemologies gained through quantitative scientific methods (French, 2009). As such the study of the IPO dictates that the researcher adopts the position of an external researcher (Patton and Appelbaum, 2003), with a subjective ontological approach, through examining the perceptions of the human actors (Hussey and Hussey, 1997).

### **3.3.2 Approaches**

From the research literature, Saunders et al. (2007) comment that the extent in which the researcher is clear about the theory at the beginning of the research, raises an important question as to the design of the research project, and hence whether the researcher follows a deductive approach, inductive approach or a mixture of both. Hyde (2000) points out, if the researcher adopts the quantitative enquiry or study, then a deductive process is generally adopted. Patton (1991) and Saunders et al. (2007) argue that the deductive approach is concerned with arriving at a reasoned conclusion, by testing or confirming a hypothesis as a means to generalise conclusions. In contrast, the literatures indicate that if the researcher adopts a qualitative or interpretive stance, then the research is considered to be conducted from an inductive process (Hussey and Hussey, 1997; Gummesson, 2006). As such the emphasis is on the realisation that the researcher is part of the research process, as a means to understand the meanings humans attach to events, in which the researcher develops a theory as a result of analysing the research data and where there is less concern with the need to establish

generalizations of the phenomenon (Patton, 1991; Saunders et al., 2007). However, whilst the literature indicates that the qualitative or interpretive stance, follows an inductive process (Hussey and Hussey, 1997; Gummesson, 2006), Kirk and Miller (1986) argue that the qualitative researcher can adopt both an inductive and deductive approach to the research.

### **3.3.3 Research paradigms**

From the research literature, the two main paradigms that form the basis of research into the social sciences are namely positivist and phenomenological. What divides these two paradigms is the question of whether the methodology of physical sciences can be applied to the study of the social phenomena (Kumar, 2005).

#### **3.3.3.1 Positivistic paradigm**

The positivist paradigm is rooted in the physical sciences, and is considered to be primarily associated with quantitative methods of analysis (Remenyi et al., 1998), and as such the basic tenet behind the positivist approach, is that the researcher is separate from the object of the study, and therefore can be considered as having minimal effect on the data obtained (Bhaskar, 1989; Dobson, 2002). However, Remenyi et al. (1998) and Gummesson (2006) argue that the positivist approach to research in the physical and life sciences is not entirely appropriate to the study of human beings, or the organisations' they have created. Consequently table 3.1 point to the positivistic researcher focusing on facts and looking for causality between events by reducing the phenomena in question to its simplest element (Easterby-Smith et al., 2002). In terms of the data used, table 3.2 shows that the positivistic paradigm is associated with large samples in which hypothesis are tested (Hussey and Hussey, 1997), which leads the data to be highly specific and precise and where reliability is considered high, and validity considered low (Stake, 1995; Patton and Appelbaum, 2003).

Table 3.1: Key features of the positivist and phenomenological paradigms  
(source Easterby-Smith et al. (2002, p. 27))

|                                   | <b>Positivistic</b>   | <b>Phenomenological</b>   |
|-----------------------------------|---|---|
| <b>Basic beliefs:</b>             | <ul style="list-style-type: none"> <li>• The world is external and objective.</li> <li>• Observer is independent.</li> <li>• Science is value free.</li> </ul>  | <ul style="list-style-type: none"> <li>• The world is socially constructed and subjective.</li> <li>• Observer is part of what observed.</li> <li>• Science is driven by human interests.</li> </ul>                            |
| <b>Researcher Should:</b>         | <ul style="list-style-type: none"> <li>• Focus on facts.</li> <li>• Look for causality and fundamental laws.</li> <li>• Reduce phenomena to simplest elements.</li> <li>• Formulate hypotheses and then test them.</li> </ul> | <ul style="list-style-type: none"> <li>• Focus on meanings.</li> <li>• Try to understand what is happening.</li> <li>• Look at the totality of each situation.</li> <li>• Develop ideas through induction from data.</li> </ul> |
| <b>Preferred methods include:</b> | <ul style="list-style-type: none"> <li>• Operationalising concepts so that they can be measured.</li> <li>• Taking large samples.</li> </ul>  | <ul style="list-style-type: none"> <li>• Using multiple methods to establish different views of phenomena.</li> <li>• Small samples investigated in depth over time.</li> </ul>   |

### 3.3.3.2 Phenomenological paradigm

In contrast to the positivistic paradigm, the phenomenological paradigm is regarded as more appropriate for the more qualitative type of research of people and behaviour, primarily in non-numerical terms, through the interaction of the researcher with that being researched (Saunders et al., 2007). In this respect table 3.1 points to the phenomenological focusing on meanings and trying to understand what is happening, by looking at the holistic picture of a natural location or situation (Easterby-Smith et al., 2002). Furthermore in contrast to the large samples of the positivistic approach, table 3.2 which has been adopted from Hussey and Hussey (1997) show that the phenomenological approach is associated with small samples, in which the data is considered rich, with a high validity, however the subjective nature of the data collection often results in the reliability of such data being considered low (Patton and Appelbaum, 2003).



Table 3.2: Features of qualitative and quantitative approaches (source Hussey and Hussey (1997, p. 54))

| Qualitative (Phenomenological)  | Quantitative (Positivistic)   |
|---|---|
| <ul style="list-style-type: none"> <li>• Use small samples</li> <li>• Concerned with generating theories</li> <li>• Data is rich and subjective</li> <li>• The location is natural</li> <li>• Reliability is low</li> <li>• Validity is high</li> <li>• Generalisation from one setting to another</li> </ul> | <ul style="list-style-type: none"> <li>• Use large samples</li> <li>• Concerned with hypothesis testing</li> <li>• Data is highly specific</li> <li>• The location is artificial</li> <li>• Reliability is high</li> <li>• Validity is low</li> <li>• Generalisation from sample to population</li> </ul> |

### 3.3.4 Justification of the research philosophy and research approach

In light of the previous discourse surrounding the philosophy and approaches, the underlying determinants of the adopted philosophy was the research aim and associated literature (Tashakkori and Teddlie, 1998), in contrast to the researcher following personal preferences, which may have resulted in the validity and reliability of the study being compromised (Eisenhardt, 1989; Perry, 1998). The literature that underpins this research (Chapter two) pointed to the science of complexity as a collection of disciplines, all of which are concerned with finding emerging patterns among a collection of behaviours or phenomena (The Santa Fe Group, 1996). Furthermore complex adaptive systems address concepts such as connectivity, emergence, interaction, self organisation, co creation and co evolution, all of which are reflected through the agents of the system (Holland, 1988). The essence of this study therefore surrounded the need of the researcher to understand the perceptions and feelings of the actors / agents within the organisation, and hence how they make sense of the world around them.

The basic beliefs of the positivistic researcher is that the world is external and objective, in contrast to the phenomenological paradigm in which the researcher is considered as being part of what is observed and as such the world is considered socially constructed (Easterby-Smith et al., 2002). Further Easterby-Smith et al. (2002) also argue that that the positivistic researcher should reduce the phenomena to its simplest element, and formulate hypothesis and test them in what is regarded as a deductive approach. In contrast the researcher was drawn to the phenomenological paradigm since it is synonymous with the researcher focusing on meanings that are portrayed by the actors or agents, as a means to make sense and understand what is happening in totality, and hence develop ideas through what is regarded as an inductive approach (Easterby-Smith et al., 2002). Therefore the positivistic stance of being external and objective to the study in question, and focusing on facts in a linear manner would have contradicted the essence of the study, which is to ascertain the breadth of opinion whether non linear dynamic features of complex evolving systems (Gummesson, 2006), such as interaction and emergence, are present at the IPO. Thus based on the positivistic and phenomenological paradigms, and taking account of the objectives of the study, a phenomenological approach was regarded as appropriate for the qualitative research of people and behaviour (Stake, 1995; Barman et al., 1997), and is endorsed by complex adaptive system commentators Walsham (1995) and Sandberg (2005). In summary figure 3.2 shows the research philosophy and approach in the context of the research aim.

### **3.4 Research design**

In light of the chosen philosophy and approach, the design of the research was considered by focusing on the research strategy, the research choices, and time horizons, which had the effect of turning the research question into a research project (Saunders et al., 2007).

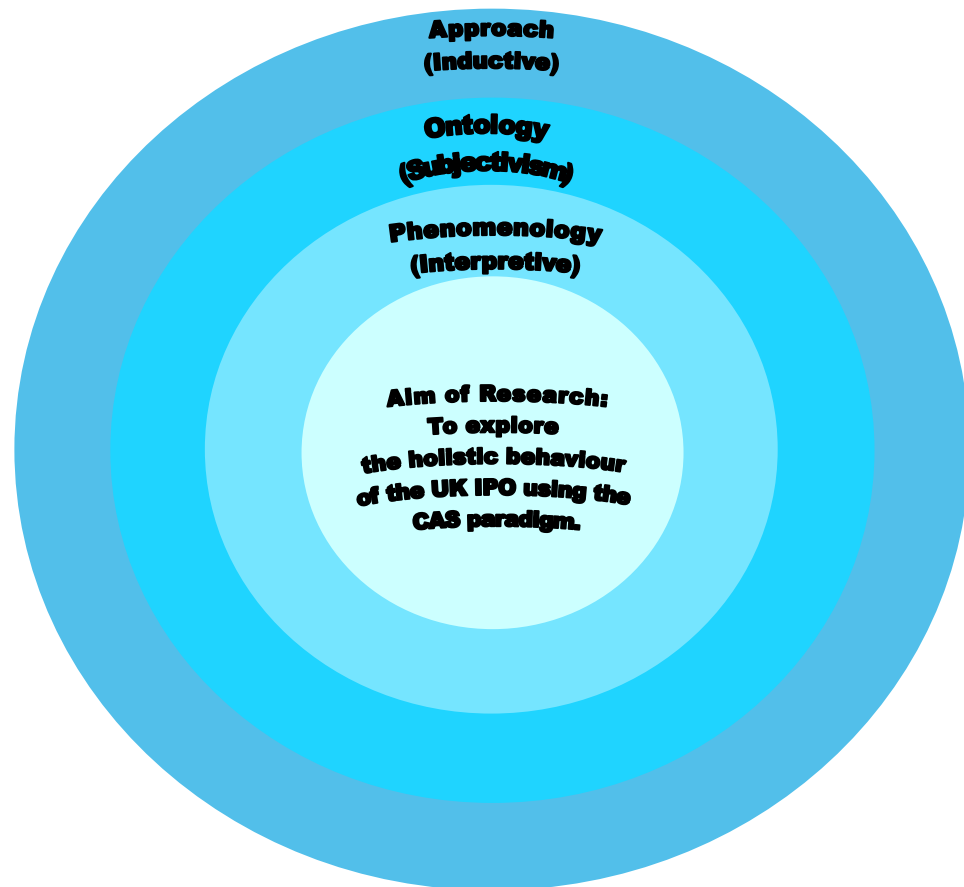


Figure 3.2: The research philosophy and approach in the context of the research aim

### 3.4.1 Research strategy

In order to justify the research strategy that was used for this study, the researcher used Yin's (2003) comparison of the available strategies, as shown in table 3.3. The research strategies were considered in light of the aim and objectives of this study, which related to the exploration of a contemporary phenomenon within a real life context, in which the emphasis was placed on understanding the 'who' 'what' 'how' and 'why' from the agents / actors of the organisation.

Table 3.3: Different research strategies (source Yin (2003, p. 5))

| <b>Strategy:</b>          | <b>Form of Research question</b>      | <b>Requires control of behaviour?</b> | <b>Focuses on contemporary events?</b> |
|---------------------------|---------------------------------------|---------------------------------------|--|
| <b>Experimental:</b>      | How, why?                             | Yes                                   | Yes                                    |
| <b>Survey:</b>            | Who, What, Where, How Many? How much? | No                                    | Yes                                    |
| <b>Archival analysis:</b> | Who, What, Where, How Many? How much? | No                                    | Yes/No                                 |
| <b>History:</b>           | How, why?                             | No                                    | No                                     |
| <b>Case Study:</b>        | How, why?                             | No                                    | Yes                                    |

Since this research focuses on a contemporary event, and was not undertaken in a controlled context, Yin's (2003) comparison of available strategies indicated, that two strategies were available to the researcher, namely surveys and case studies. The survey strategy is generally associated with a deductive approach and used in 'exploratory' and 'descriptive' management research and is considered suitable for the collection of a large amount of data from a large population. The data is often collected using a questionnaire, and the data produced is standardised which allows for easy comparison. The survey strategy also allows researchers to collect quantitative data which can be analysed using quantitative statistical techniques, which can be used to identify relationships between variables (Saunders et al., 2007; Wilson, 2014). The survey strategy is also undertaken in context of the study, although it is considered that the ability to explore and understand the context is limited by the number of variables in which the data is collected.

In contrast the case study strategy highlights the importance of context, in which a rich understanding of the context of the research and the processes that are being undertaken, facilitates both 'explanatory' and 'exploratory' research (Wilson, 2014). Case studies also provide high value in applied social sciences, in which the research often aims to provide practitioners with tools (Stake, 2005). However case studies also have a number of weaknesses which include, relying on analytical generalisations (Flyvbjerg, 2001), and can take a long time to complete, which may result in drowning in the data (Rarick, 2003). Although case studies represent interpretations of social reality, they are not considered to be objective (Muhamat, 2009), and whilst case studies can establish relationships between variables, this is not necessarily the direction of the causation (Straits and Singleton, 2006).

### **3.4.2 Justification for the chosen strategy**

To determine the chosen strategy, the researcher used the aim and objectives of the study, in contrast to following personal preferences, which may have resulted in the validity and reliability of the study being compromised (Eisenhardt, 1989; Perry, 1998). From the previous discussion surrounding the survey and case study strategies, it emerged that the survey strategy had a greater emphasis on quantitative data and a deductive approach, with the aim of establishing relationships between variables. This is contrary to the chosen research philosophy and approaches, which placed an emphasis on the qualitative research of people and behaviour (Stake, 1995; Barman et al., 1997). In contrast the case study strategy places an emphasis on obtaining a rich understanding of the context and the processes that are being undertaken (Patton and Appelbaum, 2003; Robert, 2009). Case study strategies are also considered as recognising the complexity of social truth (Rarick, 2003); allow for large number of variables and different aspects of the phenomenon to be considered (George and Bennett, 2005); and offers the opportunity for a holistic view of a process (Primus, 2008). As such the researcher considered that the case study strategy was the most appropriate to meet the study of people and behaviour (Stake, 1995; Barman et al., 1997), and hence meet the essence of the study, which surrounded the need of the

researcher to understand the perceptions and feelings of the actors / agents within the organisation, and how they make sense of the world around them. However, the researcher was mindful of ensuring that the chosen strategy did not rely on analytical generalisations (Flyvbjerg, 2001) or drown in the data (Rarick, 2003).

### **3.4.3 Chosen strategy – Case study**

Whilst a case study strategy had been chosen the researcher needed to consider whether the adopted case study design would follow a single or multiple case design, and whether the chosen design should be holistic or embedded (Yin, 2003).

#### **3.4.3.1 Single case v multiple case**

Yin (2003) provides five arguments for the use of the single case study namely:

- Firstly a critical case tests a well formulated theory which has a specified clear set of propositions, as well as the circumstances within which the propositions are believed to be true. To confirm challenge or extend the theory, a single case study may meet all of the conditions for testing the theory.
- Secondly an extreme case or unique case, for example in clinical psychology, in which specific injury or disorder may be so rare, that any single case is worth documenting and analysing.
- Thirdly a representative or typical case in which the objective is to capture the circumstances and conditions, of an everyday or commonplace situation. For example, the case may represent a typical project among many different projects, such as a manufacturing firm believed to be typical of many other manufacturing firms in the same industry or representative school. The lessons learned from these cases are assumed to be informative about the experiences of the average person or institution.

- Fourthly the revelatory case exists when an investigator has the opportunity to observe and analyse a phenomenon previously inaccessible to scientific investigation.
- Fifthly in a longitudinal case the investigator is studying the same single case at two or more different points in time.

In contrast if there is a need for the investigator to establish whether the findings of the first case occur in other cases; and as a consequence there is a need to generalise from the findings, Yin (2003) argues that a multiple or more than one case should be used.

#### **3.4.3.2 Holistic v embedded**

The second dimension that Yin (2003) distinguishes between case studies is between holistic and embedded, which refers to the unit of analysis used for the study. Yin (2003) argues that if the researcher is concerned with the organisation as a whole, then the researcher is treating the organisation as a holistic case study. Conversely, if the researcher is researching a single organisation but also wishes to examine a number of sub units within the organisation, for example departments, then the case study would involve more than one unit of analysis, and as such would be called an embedded case study. The holistic and embedded case study designs are depicted in figure 3.3 (Yin, 2003).

#### **3.4.3.3 Justification of chosen case study**

The researcher considered that the present 'exploratory' research was closely aligned to Yin's (2003) single case study, in which the case is considered a representative or typical case. This approach allowed the researcher to examine the case in question intensively, even when the research resources at the investigators disposal was relatively limited (Yin, 2003). The researcher also considered that the unit of analysis for this study (Yin, 2003), was the agents from all departments, which were used as a means to understand the holistic behaviour of the IPO. As such the researcher concluded that the study would that of a single holistic case study (Yin, 2003).

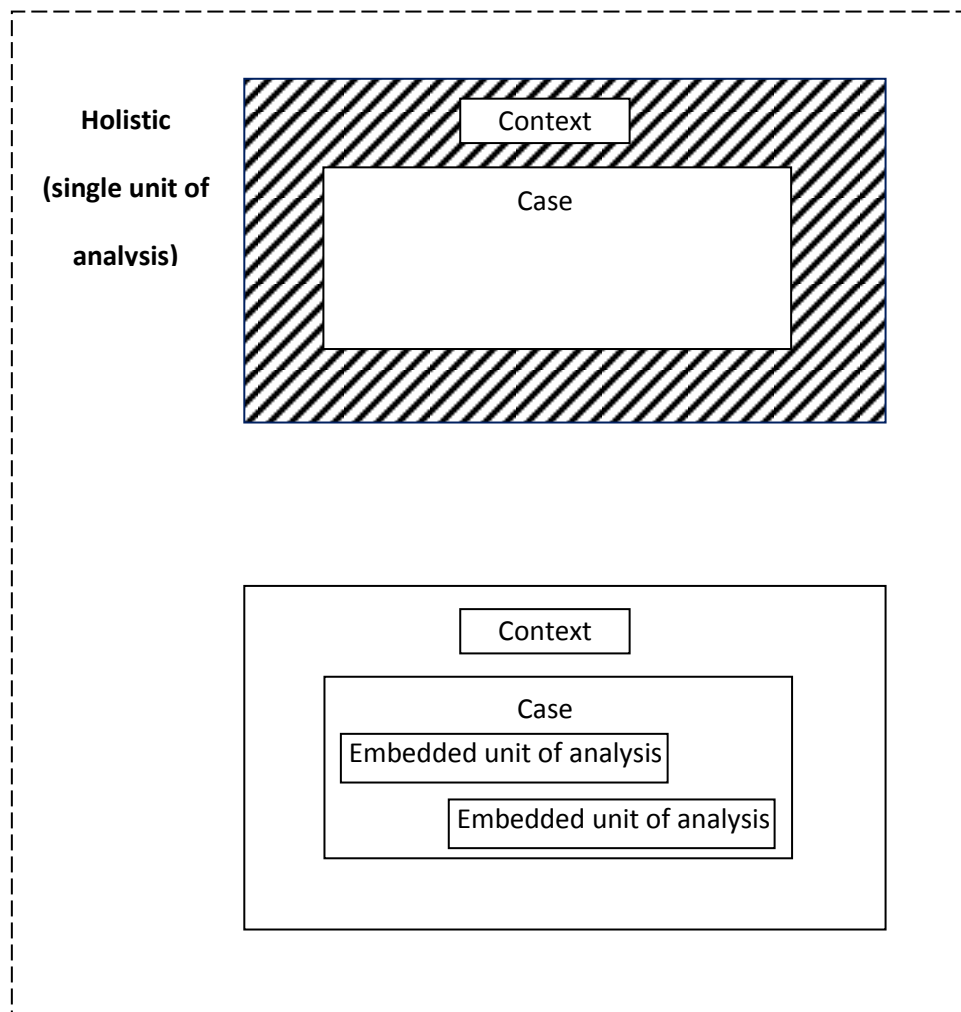


Figure 3.3: Basic types of designs for single case study (source Yin (2003, p. 40))

### 3.5 Research choice

As previously discussed the essence of this study is to understand the behaviour of the organisation in which the unit of analysis is the agents / actors. As such the interpretive stance was reflected through the qualitative knowledge, which may be gained from the researcher's interaction with the agents / actors of the organisation (Gummesson, 2006). Saunders et al. (2007) also point out that both qualitative and quantitative techniques and analysis have strengths and weaknesses, and as such there is a relationship between the data collection technique that the researcher chooses and the



results that are obtained. The research literature indicates that in business research it is not unusual to take a mixture of approaches particularly in the methods of collecting and analysing of the data (Collis and Hussey, 2009; Jogulu and Pansiri, 2011). Further justification for this mixed method approach as a means to investigate this social phenomenon, is provided by Phelps and Hase (2002), who argue that any study of complexity cries out for a mixed method approach, which is also echoed by Greene (1994), and Hase (2000), who have all put forward a strong case for adopting such methods in complexity based research. Further evidence of a mixed method approach is also advocated and supported by commentators Yin (1984) and Eisenhardt (1989) when the researcher is investigating a contemporary phenomenon within a real life context and holistic manner. The research literatures also point to one of the advantages of using the mixed method approach for the researcher is that it enables 'triangulation', where data is collected from different sources (Saunders et al., 2007).

### **3.6 Time horizon**

A key question with regard to the study was the time frame in which the research was conducted. Saunders et al. (2007) point to:

- Cross sectional studies, in which the study is at a particular point in time; and
- Longitudinal studies in which the basic question is 'has there been any change over a period of time?'

Based on the aim and objectives of this study the researcher considered that the approach taken is one of a snap shot or cross – sectional study, in which the behaviour of the IPO is explored over a short period of time (Moreno, 2008). This study was not concerned with looking for any change over a period of time as adopted by complexity commentators Walsham (1995), Sandberg (1995) and Kim and Kaplan (2006). However the researcher recognised that a longitudinal study through its capacity to study change and

development over a period of time would be useful, if any further research concerning IPO behaviours was undertaken in the future.

### **3.7 Data and data collection methods**

Yin (2002, p. 80) lists six sources of evidence, without reference to their relative strengths and weaknesses, which a researcher may use to gather data for their chosen study, namely:

1. Documentation – such as letters, memoranda, internal reports, annual reports, press reports, minutes of meetings or emails.
2. Archival records - such as organisational charts, personnel records, internal magazines or internal material.
3. Interviews - structured or semi-structured
4. Direct observation – via field visits to sites.
5. Physical observation - where the researcher takes an active role in the case
6. Physical artefacts - such as technological devices, a work of art, trophies or photographs.

#### **3.7.1 Primary data**

From Yin's (2002) identified list of sources, the researcher considered that interviews were the most appropriate primary data collection method to meet the study of people and behaviour (Stake, 1995; Barman et al., 1997). This method was considered to meet the essence of the study, which surrounded the need of the researcher to understand the perceptions and feelings of the actors / agents within the organisation, and how they make sense of the world around them; as a means to understand the holistic behaviour of the IPO.

A simple definition of an interview is “*a purposeful conversation between two or more people*” (Saunders et al., 2007, p. 310) which can help the researcher to gather valid and reliable data. There are three types of interviews namely structured, semi-structured and unstructured (Saunders et al., 2007). In structured interviews, the researcher usually prepares a set of questions, in

what is referred to as the 'interview schedule', where the wording and the order of the questions are repeated verbatim for each interview (Kumar, 2005). As a result, the interviews are considered to obtain uniform information, which assures the comparability of data. In semi structured interviews, the interviewer will set out with a number of key themes and questions that need to be covered, which allows the researcher to vary the order of questions, and if need be, add additional questions to explore the aim and objectives in greater detail (Saunders et al., 2007). This approach is considered more appropriate when complex, personal or sensitive issues are being probed (Hannabuss, 1996). In unstructured or in-depth interviews, the interviewer is considered to have no predetermined questions to work through (Saunders et al., 2007), and as such formulates questions as the interview progresses (Kumar, 2005), which necessitates the interviewer having a clear idea of the problem or aspects they intend to explore (Saunders et al., 2007).

As with all data collection methods, interviews have both advantages and disadvantages which have been annotated in table 3.4. Kumar (2005) indicates that interviews are considered to be time consuming, where the quality of data may vary, and depend upon the quality of the interaction of the parties, which may be biased by the interviewer. In contrast, interviews are considered appropriate for complex situations, where in-depth information can be collected, and where questions can be explained and supplemented by further questions (Kumar, 2005).

### **3.7.2 Justification for the chosen interview process**

To determine the chosen interview process, the researcher evaluated each process with the aim and objectives of the study in mind. That said, the completely unstructured (in-depth) interview, was considered not suitable since it may have resulted in participants being interviewed, having no clear picture in mind of what questions or issues the researcher was interested in, and the researcher having no clear understanding of what questions those interviewed were answering (Easterby-Smith et al., 2002). In contrast, the structured interview is considered good for eliciting information about large

numbers of people, for example using a reference library or finding out people's choice of consumer product (Hannabuss, 1996; Robson, 2011). This type of interview surrounds verbatim interviews, resulting in uniform information, which assures the comparability of data (Kumar, 2005).

Table 3.4: Advantages and disadvantages of interviews (source Kumar (2005))

| Advantages   | Disadvantages   |
|--|---|
| <ul style="list-style-type: none"> <li>• It is an appropriate method for a complex situation</li> <li>• It is a useful method for collection of in-depth information</li> <li>• Information can be supplemented</li> <li>• Questions can be explained</li> </ul> | <ul style="list-style-type: none"> <li>• Interviewing is time consuming and expensive</li> <li>• The quality of data depends upon the quality of the interaction</li> <li>• The quality of the data may vary when interviewers are used</li> <li>• The interviewer may be biased</li> </ul> |

Although the researcher recognised the need for some structure for the interviews, it was considered vital that the interview schedule was designed in such as way that it did not limit responses to those themes already identified. Since the nature of the study is to understand the complex phenomena, surrounding the need of the researcher to understand the perceptions and feelings of the actors / agents within the organisation, and how they make sense of the world around them (Hannabuss, 1996; Saunders et al., 2007). The semi structured interview was considered to fulfil this requirement, since the process allowed the researcher to ask the same questions in a different order and logic, and as such the opportunity to not only dictate the topic and issues to be investigated, but also the flexibility to adjust the approach and questioning whilst generating the rich qualitative data (Hussey and Hussey, 1997; Cryer, 2000; Sekaran, 2003; Jankowicz, 2005). However, the researcher was mindful of the danger that is associated with both formal and informal interviews, and the risk of leading participants and putting ideas into

their head or giving them clues on what they thought the interviewer wanted to hear (Hannabuss, 1996).

### **3.7.3 Secondary data**

Saunders et al. (2007 p. 246) comments *“that secondary data can provide a useful source from which to answer or partially to answer your research question(s)”*. This view is also echoed by Buxton and Radnor (2012), who argue that secondary data is useful in understanding relationships between different data sets, and thereby a source of rich data for studies. Furthermore Wilson (2014) points to a variety of classifications for secondary data, namely:

1. Documentary secondary data: includes written material such as notices, correspondence, minutes of meetings, and reports to shareholders.
2. Survey – based secondary data: data is collected using a survey strategy that have previously been analysed for their original purpose; and
3. Multiple - source secondary data: based entirely on documentary or on survey data, or the amalgamation of the two.

Based on the above classifications, the chosen secondary data used for this study is consistent with the third classification, in which the data used was an amalgamation of both documentary and survey data. The reports and surveys used were considered relevant to the research question, and were available to the researcher. However, the researcher was mindful that there may be contextual or simply interpretation differences which may cast doubt on the validity and reliability of the data (Kolassa et al., 2013).

### **3.7.4 Triangulation**

In light of the essence of the study, which surrounded the investigation into the social contemporary phenomenon through the study of complexity, the researcher selected a mixed method approach (section 3.5). Consequently one of the advantages of the mixed method approach is that it enables ‘triangulation’ where data is collected from different sources (Saunders et al., 2007; Jogulu and Pansiri, 2011). Yin (2002) maintains that triangulation is the

application and combination of several research approaches in the same research to validate results. It can be employed in both qualitative research modes, including case studies and quantitative research modes for the purpose of validation.

Easterby-Smith et al. (2002) identifies four basic types of triangulation:

1. Data triangulation, where data is collected at different times or from different sources in the study of a phenomenon;
2. Investigator triangulation, where different researchers independently collect data on the same phenomenon and compare the results;
3. Methodological triangulation, where both quantitative and qualitative methods of data collection are used; and
4. Triangulation of theories, where a theory is taken from one discipline (for example marketing) and used to explain a phenomenon in another discipline (for example accounting).

This study's approach is consistent with the first type of triangulation as identified by Easterby-Smith et al. (2002), where data is collected at different times or from different sources in the study of a phenomenon. The study also follows that of Garcia-Canal et al. (2002) and Yan and Duan (2003), who used interviews and archival data to confirm responses of studies, in a triangulated research process as shown in figure 3.4. However, the researcher was mindful of Jack and Raturi's (2006) work that identified potential limitations associated with triangulation, which may be amplified by the chosen methodology and the selected data sources. These limitations were categorised as:

1. Method specific issues; and
2. Assumptions relating to a cross-method generalization and inference.

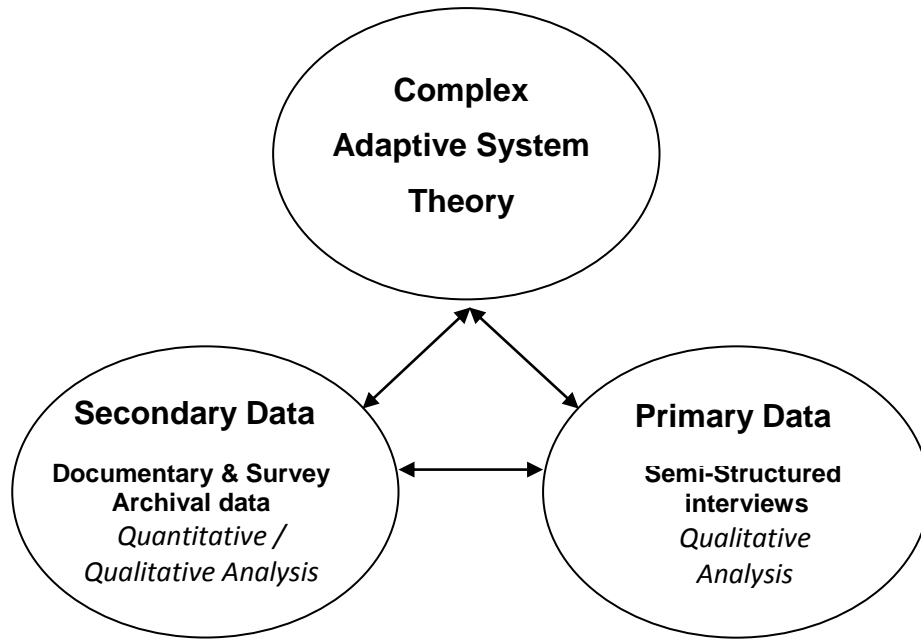


Figure 3.4: Triangulation studies, data sources, and analytical methods (source Jack and Raturi (2006, p. 351))

### 3.7.5 Objectivity and the role of the researcher

In light of the essence of the study surrounding the social world from the viewpoint of the “actor” or what this research refers to as the people working in the organisation and doing particular jobs (Hannabuss, 1996; Saunders et al., 2007). The research approach was considered to be qualitative, in which the context of the qualitative research, was considered to be underpinned by a properly thought through research design, realistic identification of the research interview as a valid and reliable instrument, meticulous data analysis and inductive reasoning, as a means to allow the researcher to achieve and gain the hidden aspects of human behaviour (Hannabuss, 1996). However qualitative research has its critics, on the grounds of too much subjectivity and too little control, and as such the semi structured interview and the case study which has been adopted in this research, is considered susceptible to this criticism (Saunders et al., 2007; Robson, 2011). To the point that some literatures, argue that a researcher cannot be neutral, objective or detached from the knowledge and evidence that they are generating (Mason, 2002).

As a means to address the 'subjectivity' claims, the literatures point to the qualitative researcher having an 'objective' stance. Strauss and Corbin (1998) define 'objectivity' in qualitative research as:

*.....objectivity does not mean controlling the variables. Rather it means openness, a willingness to listen and to 'give voice' to respondents, be they individuals or organisations. It means hearing what others have to say, seeing what others do, and representing these as accurately as possible.*

Whilst Saunders et al. (2007, p. 187) comments:

*You must be very conscious of the assumptions and preconceptions that you carry around with you. This is an inevitable consequence of knowing the organisation well. It can prevent you from exploring issues that would enrich the research.*

In consideration of what Hannabuss (1996) refers to as the validity and reliability surrounding the methods of data collection and analysis, the researcher acknowledged the importance of understanding the impact of validity and reliability on the study.

#### **3.7.5.1 Reliability**

The literatures define reliability as the extent in which the data collection techniques or analysis will give rise to consistent findings (Saunders et al., 2007). Robson (2011) argues four potential threats to reliability as follows:

- **Subject or participant error** – where the research which may be carried out at different times of the day may result in different results.
- **Subject or participant bias** – in which participants may attempt to give answers that their managers or superiors are looking for.
- **Observer error** - may occur where there are a number of researchers conducting interviews and hence asking questions to elicit answers.
- **Observer bias** - where during the observer research there may have been a number of different ways of interpreting the replies.



The researcher acknowledged the relevance of Robson's (2011) subject or participant error and/or bias on this study; and used Mitchell's (1996) approaches to assessing reliability. This included testing the credibility of questions of semi structured interview, and the consistency of the researcher during the research process via a pilot study (Brenner et al., 1985), as a means to increase the studies reliability.

### **3.7.5.2 Validity**

Validity is concerned with whether the findings are really about what they appear to be about (Saunders et al., 2007). Yin (2003) refers to three forms of validity, namely:

- Construct validity - is the extent in which the researcher's measurement questions actually measure the presence of those intended constructs;
- Internal validity - is the ability of the questionnaire to measure what the researcher intended; and
- External validity – is the extent in which the findings may be considered as applicable external to the situation or context studied.

As a means to address Yin's (2003) forms of validity, a key suggestion from the literatures for dealing with construct validity is through the use of multiple sources of evidence. Consequently as previously discussed in section 3.7.4, the essence of the research pointed the researcher towards 'triangulating' the data from the primary research with that of the secondary research. However, with respect to the secondary data Saunders et al. (2007) argue that the researcher should review the data as follows:

#### **1. Overall suitability**

- Measurement validity: Secondary data that did not provide the researcher the information to answer the research questions would

have resulted in invalid data. As such all reports and surveys that fell into this category were excluded.

- Coverage and unmeasured variables: Secondary data that did not cover the population of the IPO and the time period that was required was excluded.

## **2. Precise suitability**

- Reliability and validity: The researcher made an assessment of the reliability and validity of the documentary data based on any inconsistencies and inaccuracies that were noticeable, as a result of reviewing the method(s) by which the data had been collected and the precision required by the primary user.
- Measurement bias: Whilst the researcher adopted a neutral stance, the researcher examined the documents for any deliberate distortion of data or any changes in the way the data had been collected and whilst this was difficult to detect, the researcher was content with the way the analysis had been produced.

As a means to address the internal validity of the study, the literatures point to the proposed interview questions, being subjected to a preliminary test (Hussey and Hussey, 1997; Sekaran, 2003; Yin, 2003), by piloting the study. As such, the researcher adopted a pilot study to refine the wording, ordering, layout and filtering of the questions (Hoinville and Jowell, 1977), and to focus on particular areas that may have been previously unclear (Denzin and Lincoln, 2000); and hence increase the validity and credibility of the study (Brenner et al., 1985).

To address external validity, in light of the purpose of this qualitative study, the research goal may be considered to offer a case description (including data collection procedures), that would allow the reader to repeat the research process in another case (Kidder and Judd, 1986; Vaughan, 1992). Although

this single case may not provide sufficient evidence to make robust generalisations, it can still establish the existence of a phenomenon (Van Maanen, 1988).

### 3.7.6 Ethical considerations

As part of the research process, the research literatures indicate that ethical concerns will emerge through all stages of the study. As such, research ethics refers to the appropriateness of the researcher's behaviour in relation to the rights of those who become the subject of the work or are affected by the work of the study. Saunders et al. (2007, p. 178) comments:

*“Research ethics relates to questions about how we formulate and clarify our research topic, design our research and gain access, collect data, process and store our data, analyse data and write up our research findings in a moral and responsible way”.*

Figure 3.5 highlights the broad nature of ethical issues that can arise at different research stages. Consequently, the researcher identified the following key ethical issues for this study, namely:

- Privacy of actual participants
- The right of participants to withdraw from the process
- Consent and possible deception of participants
- Maintenance of the confidentiality of data provided by the participants and the organisation
- Reaction of participants in the way the researcher collected the data, which included embarrassment, stress, discomfort, pain and harm
- Effect on participants in the way the researcher used and reported on the data
- Objectivity of the researcher

As a means to address the ethical considerations, the researcher ensured that the study was subjected to the ethics and confidentiality rules laid down

for academic research of this nature. To identify potential issues, the researcher used Kervin's (1992, p. 39) checklist as follows:

1. Will the research process harm participants or those about information are gathered (indirect participants)?
2. Are the findings of this research likely to cause harm to others not involved in the research?
3. Are you violating accepted research practice in conducting the research and data analysis, and drawing conclusions?
4. Are you violating community standards of conduct?

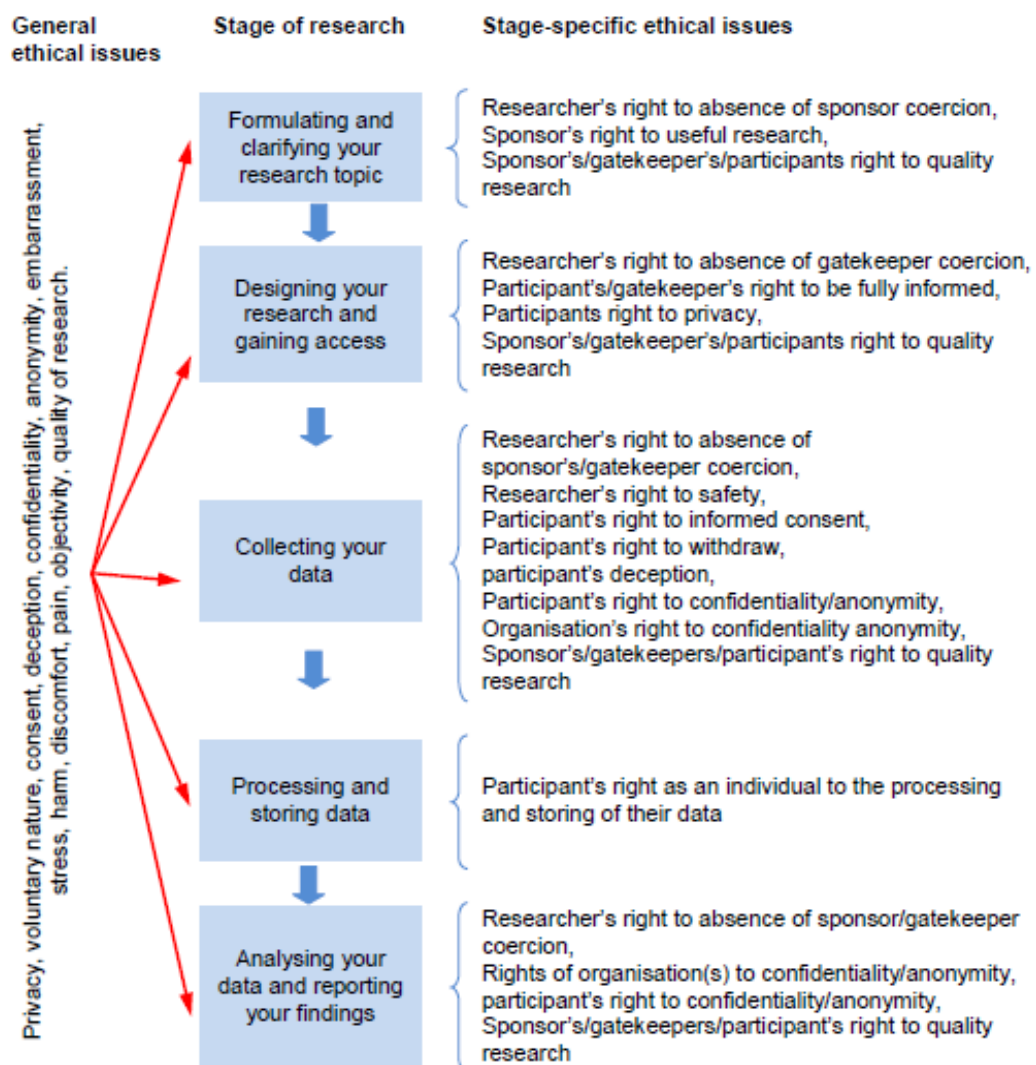


Figure 3.5. Ethical issues at different research stages (Source Saunders et al. (2007, p.180))

### **3.8 Operationalization of research questions**

In light of the adopted research design of this study, this section reflects the operationalization of the research questions, and the measures which had been taken concerning reliability, validity and ethical considerations.

#### **3.8.1 Semi structured Interviews**

The semi structured interviews was conducted at the Offices of the IPO in Newport, South Wales. This setting was selected as it offered the researcher a focused approach for the collection of the data to answer the research question, and allowed access to the participants. The semi structured interviews took place between April and June 2012, and a Dictaphone was used to record each interview, which took between 45 – 60 minutes.

In the first instance, the CAS concepts identified in the literature review, were analysed to establish the relationship between the research questions and the CAS concepts. This allowed the researcher to identify the rationale for the questions for the semi structured interview. Table 3.5 highlights the aforementioned relationships and allowed the researcher to compile a list of questions that related to the CAS concepts and also the established data themes that emerged from the literature review (section 2.7.4.1.4) which are highlighted in table 3.6. The relationship between the questions and the CAS concepts and data themes, were established to assist the analysis of the data.

The initial question was established as an ‘ice breaker’ to start proceedings, and had no relationship to the CAS concepts or data themes. The following questions were designed to understand their perceptions and feelings about the behaviours, and the reasons behind the behaviours that exist within the IPO. The questions were split, and included a set of questions that were directed only to participants that were in management roles, this included participants who managed staff, and those whose role concerned management information; in order to explore the strategic and management decisions of the IPO.

Table 3.5: Relationship between the research questions and CAS concepts

| Key to CAS concepts:             |   | Rationale for questions e.g. links/ potential outcomes to CAS concepts   |
|----------------------------------|---|--|
| <b>F</b><br><b>C</b><br><b>T</b> | Fitness Landscape<br>Co-Evolution<br>Tipping points | <p>Questionnaire to ascertain interviewees position with regard to the extent to which they are looking externally with respect to what they consider are the:</p> <ul style="list-style-type: none"> <li>◆ Stakeholders of the IPO,</li> <li>◆ How the IPO objectives potentially impact with the stakeholders</li> <li>◆ Challenges and opportunities that the IPO face both internally and externally e.g. potential tipping points and new strategies</li> <li>◆ Strength and weaknesses of the IPO in meeting these challenges and opportunities</li> <li>◆ The impact of working with other offices</li> </ul> |
| <b>S</b>                         | Self organisation                                   | <p>Questionnaire to ascertain from interviewees the IPOs:</p> <ul style="list-style-type: none"> <li>◆ Culture e.g. blame, bureaucratic, risk averse, ability to learn, trust, empowerment, ability to change, top down control, creativity and innovation</li> <li>◆ Communication / feedback</li> <li>◆ Structure / connectivity, existence of silos</li> <li>◆ Information flows</li> </ul>   |
| <b>E</b>                         | Emergence   | <p>Questionnaire to ascertain from interviewees how the IPO:</p> <ul style="list-style-type: none"> <li>◆ Carries out change, including speed of change, power differentials</li> <li>◆ Makes decisions, the processes and who is involved e.g. top down or bottom up</li> <li>◆ Develops its strategy and the extent to which legislation and ministers for example restrict /assist this development.</li> </ul>   |
| <b>L</b>                         | Learning organisation                               | <p>Questionnaire to ascertain from interviewees whether the IPO:</p> <ul style="list-style-type: none"> <li>◆ Learns from its mistakes</li> <li>◆ Has the ability to learn e.g. unlearn and learn</li> <li>◆ Has a culture that supports learning, creativity and innovation, risk taking</li> <li>◆ Is learning for certainty or learning for uncertainty</li> <li>◆ Diversity of staff</li> </ul>  |

**Key:**

**CAS Concepts:** **F**=Fitness landscape; **T**=Tipping points; **C**=Co-evolution; **E**=Emergence; **S**=Self-organisation; and **L**=Learning

Table 3.6: Semi structured interview questions, including link to CAS concepts and data themes

[Key shown at the end of the table]

| Questions for all interviewees  | CAS concepts  | Data Themes   |
|---|---------------|---------------|
| ♦ Background: How long have you been at the IPO? What is your current role within the IPO?  | n/a           | n/a           |
| ♦ Who do you consider are the stakeholders (e.g. internal/external customers) of the IPO?   | F,C           | E             |
| ♦ Are you aware of the objectives of the IPO:<br>If Yes: i) How do you see your role assisting the IPO to meet these objectives?<br>ii) How do you see these objectives impacting the stakeholders of the IPO?<br>If no: is this because you have not been informed, and/or the IPO objectives have not been clarified. | F,C,S         | E,C           |
| ♦ What do you think are the:<br>i) challenges /demands that the IPO are facing now and in the future?<br>ii) opportunities that the IPO are facing now and in the future?   | F,C,T         | E             |
| ♦ What do you see as the strengths and weaknesses of the IPO to meet these challenges and opportunities?  | F,C,T, E, S,L | E,D, CIR, Cu  |
| ♦ How would you describe the culture of the IPO?  | S,L           | Cu            |
| ♦ To what extent (if any) does the culture of the IPO need to change to meet the challenges / demands and opportunities that the IPO faces?   | S,L           | C, CIR, Cu    |
| ♦ Do you feel there is adequate links between all parts of the organisation for:<br>♦ Decision making,<br>♦ communication,<br>♦ feedback,<br>♦ change?<br>If not why?   | S,E,L         | D, C, CIR, Cu |

|  |                 |                      |
|--|-----------------|----------------------|
| ♦ Do you feel that you are involved with decision-making processes and as such do you feel that your comments / contributions are listened to?   | <b>E,S,L</b>    | <b>D,C, CIR, Cu</b>  |
| ♦ Are you empowered to be creative / innovative and take risks in your day to day role?<br>If no, do you feel constrained by any rules, regulations and processes of the IPO?  | <b>S,E,L</b>    | <b>D, CIR, Cu</b>    |
| ♦ In your opinion does the IPO find it easy to carry out change?   | <b>S,E,L</b>    | <b>D, Cir, Cu</b>    |
| ♦ Where the IPO was not able to carry out change or where the change process did not go very well, have you been able to, or has the IPO been able to learn any lessons?<br>If yes, how?   | <b>L, E</b>     | <b>CIR, Cu, D</b>    |
| <b>Additional questions for Participants in Management Roles</b>   |                 |                      |
| ♦ To what extent do other IP offices strategies impact on the UK IPO's strategy?   | <b>F,C,T, D</b> | <b>E, D</b>          |
| ♦ To what extent has the IPO considered the long term impact of the current mutual working agreements e.g. patent prosecution highway, shared IT systems?  | <b>C, E</b>     | <b>E, D</b>          |
| ♦ To what extent has the strategy process relied on the predictability of the future based on past trends?   | <b>E</b>        | <b>D</b>             |
| ♦ Do you feel that regulations and legislation such as trading funds and European IP directives have an impact on the degree to which the IPO can adapt its strategy?  | <b>E, C</b>     | <b>D, E</b>          |
| ♦ To what extent are the management team empowered to make strategic decisions without reference to government ministers and or the steering board?<br>If restricted: Are the management teams opinions valued and considered as part of a debate or outcomes dictated from ministers or steering board? | <b>E,S</b>      | <b>D,C, CIR, Cu</b>  |
| ♦ In the strategy setting process of the IPO, to what extent is the involvement of individuals and teams below senior management?  | <b>E,S, L</b>   | <b>D, C, CIR, Cu</b> |

**Key:**

**Data Themes:** **E**=Environment; **D**=Decision Making; **C**=communication; **CIR**=Creativity, Innovation & Risk; and **Cu**=Culture.

**CAS Concepts:** **F**=Fitness landscape; **T**=Tipping points; **C**=Co-evolution; **E**=Emergence; **S**=Self-organisation; and **L**=Learning.



The established questions were designed not to be leading, to give open responses, as opposed to 'yes' and 'no' answers; and allowed the researcher to ask further questions to clarify responses, or to encourage participants to expand on their answers. For example the question "*To what extent (if any) does the culture of the IPO need to change to meet the challenges / demands and opportunities that the IPO face?*", was designed to encourage participants to discuss how they saw the culture of the IPO. This was to ascertain the degree to which they saw the IPO as having a creative culture, that was used to respond to any challenges or opportunities that the IPO faced.

#### **3.8.1.1 Reliability and validity**

In addition to designing questions that were open and not leading, as a means to increase data quality, the researcher also took appropriate action to reduce participant and interviewer bias, and to increase the both reliability and validity of the data collected.

Prior to conducting the interviews, the researcher refreshed their knowledge of current developments at the IPO, by reading the IPO's annual report, and articles on their website for example. This allowed the researcher to appreciate the context of the responses, and facilitated the development of supplementary questions. This also allowed the researcher to identify potential participants providing stock answers that followed the 'party line', and in these instances supplementary questions were asked.

Whilst conducting the interviews, the researcher ensured that both tone and non verbal behaviour which may have unduly influenced or created bias was eliminated as much as possible through the neutral stance adopted. As a means to ensure impartiality and objectivity, the researcher also made every effort to phrase the questions clearly, and avoided unnecessary jargon that may have resulted in misunderstanding. The researcher's understanding of participants responses, were frequently tested to ensure the researchers evaluation of the context and interpretation was correct. Participants were also asked to provide real life examples as part of their response, where possible. To enhance the quality of the data, when participants were invited

to take part, the researcher provided a very broad overview of the general themes that the study was concerned with. This allowed participants the opportunity to think over their experience(s) and knowledge in these areas, prior to being interviewed, and was used as a means to increase the rich data of the study. The credibility of the study was also enhanced with regard to participants, in light of the acceptance of the study by the CEO of the IPO, and the designation of a conference suite for the researcher to conduct the interviews.

### **3.8.2 Pilot study**

For this research the pilot study was an integral part of the research process since it provided the researcher with the opportunity to run through the interview process. The pilot study was undertaken at the MoD in Bristol. The MoD was chosen since it represented another aspect of the civil service.

The pilot study allowed an assessment of the questions, to ensure the questions were open and not leading, and the order, layout and filtering of the questions were correct. In addition, the responses were assessed to light of the research question, as a means ensure good quality, reliable and valid data. The pilot study also allowed the researcher to assess the neutral stance adopted during the interview process. As a result, the questions were refined to overcome issues established during the trial. These included the inclusion of examples for participants who were unaware of the meaning of 'stakeholders' for example. The addition of named areas, such as 'decision making', 'feedback', for the 'Do you feel there is adequate links between all parts of the organisation?' question; since it was found that the question on its own did not provide sufficient feedback to cover these areas which were part of the research question. The pilot study also highlighted that the questions should be split, so that questions that were exploring management and strategic decisions, were only asked to participants who had knowledge in this area, such as participants who were managers or had roles concerning management information. The pilot identified that participants who were not in the management field, were unable to answer the questions, or felt

uncomfortable providing answers on topics they were unfamiliar with, which questioned the reliability and validity of their responses.

The pilot study allowed the researcher to not only test the interview questions, but to develop the semi-structured interview protocol and guide, which was used as an aide memoire (Appendix 1) to allow consistence with all participants. The pilot also allowed the researcher to assess the practical aspects of the interview process. This allowed the room layout and Dictaphone to record the interviews to be tested. This highlighted the need for an informal room setting, refreshments, and a clock in sight of the researcher in order to keep interviews on track. The process allowed the researcher to ascertain the potential duration of each interview, and how many interviews the researcher would be reasonably able to complete within a day, without jeopardising consistency with the interviews. This enabled the researcher to assess the approximate time required to complete the necessary interviews.

### **3.8.3 Research population**

The researcher did not go into the interview process with any preconceived idea of how many interviews would need to be completed; however, a 'key' determinant was the 'point of saturation'. This is when the researcher considered that the responses that had been received, were not adding value to the study, through new information or perspectives, which would be achieved from interviewing more participants.

As a means to understand the holistic behaviour of the organisation (Yin, 2003), participants were chosen from all over the IPO, as a means to ensure participants represented all departments / directorates of the IPO, and staff from senior managers / directors to the most junior staff. The researcher also ensured that the gender balance was as equal as possible (Yin, 1984; Dawson, 2008). As far as possible the chosen participants were randomly chosen, given the above constraints.

As a result of the above, the total number of participants interviewed was 24. Table 3.7 provides an analysis of the participants. To identify comments in relation to departments / directorates and staffing level, each participant was assigned a code e.g. 'Int 1'.

Table 3.7: Selection of participants and sample size

| Grades               |    | Directorate              |   |
|----------------------|----|--------------------------|---|
| Director             | 1  | Patents                  | 8 |
| D                    | 1  | Trade Marks              | 3 |
| C                    | 11 | Finance                  | 4 |
| B                    | 7  | International Policy     | 4 |
| A                    | 4  | ARD (IT, HR, Innovation) | 5 |
| Gender               |    |                          |   |
| 10 Male    Female 14 |    |                          |   |
| Sample Size          |    |                          |   |
| 24                   |    |                          |   |

| Interview number | Position                     |
|------------------|------------------------------|
| Int 1            | Finance Officer              |
| Int 2            | PAU Examiner                 |
| Int 3            | TMD Examiner                 |
| Int 4            | Policy Officer               |
| Int 5            | Finance Manager              |
| Int 6            | Finance Officer              |
| Int 7            | PD Formalities Examiner      |
| Int 8            | PD Formalities Manager       |
| Int 9            | TMD Policy Officer           |
| Int 10           | International Policy Officer |
| Int 11           | PD Legal Advisor             |
| Int 12           | Patent Examiner              |
| Int 13           | IT Officer                   |
| Int 14           | Economic Advisor             |
| Int 15           | Patent Examiner              |
| Int 16           | PD Legal Manager             |
| Int 17           | Human Resources Manager      |
| Int 18           | Innovation Manager           |
| Int 19           | TMD Policy Officer           |
| Int 20           | Secretariat                  |
| Int 21           | PD Formalities Examiner      |
| Int 22           | International Policy Support |
| Int 23           | Finance Manager              |
| Int 24           | Director                     |

### 3.8.4 Secondary data

As a means to establish the secondary / archival data for the study, the researcher reviewed both 'in house' and external publications that might be relevant to answer the research question. The secondary data chosen for the study was a combination of documentary publications and survey based data, and is shown in table 3.8. The chosen publications and data were considered relevant because they provided an insight to the behaviours and perception of the staff of the IPO, and included an insight into the internal processes of the IPO. The secondary data also provided an insight in to the environment in which the IPO sit.

Table 3.8: Secondary data key documents

| <b>Key document<br/>Purpose / Summary</b>   | <b>Author</b>                                | <b>Relevance to study</b>   |
|---|--|---|
| <b>Review of Intellectual Property</b><br>Importance of IP and the challenges brought by a changing economic environment for the IPO. | Gowers (2006)                                | Provides a snap shot of the wider IP system in which the IPO sits.            |
| <b>Talent Management</b><br>Review of talent management and related processes at the IPO.   | Stanton Marris (2008)                        | Assessment of the capability of the IPO to meet changes in the IP environment |
| <b>Value for Money</b><br>Review of the IPO to examine whether business model was soundly based.                                      | Austin and Heath (2010)                      | Review of internal processes at the IPO                                       |
| <b>Review of Intellectual Property</b><br>Challenges of a changing economic environment and impact for IPO.                           | Hargreaves (2011)                            | Provides a snap shot of the wider IP system in which the IPO sits.            |
| <b>IPO People Survey</b><br>Annual staff attitude survey to assess employee engagement by experiences at the IPO.                     | Administered by central Civil Service (2011) | Staff perceptions on key drivers of the IPO.                                  |

#### **3.8.4.1 Reliability and validity**

In order to address any potential data quality issues, the researcher whilst choosing the publications and data, relied on the studies data themes to assess the documents, to remove as far as possible any researcher bias. The documents were also thoroughly evaluated for their independence; coverage both in terms of population and time period; and the manner in which the data had been collected and analysed. For example the IPO People Survey, had a high response rate, and was collated independently by the central civil service, and hence considered reliable. In addition the researcher examined the documents for any deliberate distortion of data, or any inconsistencies in the way the data had been collected. Those documents that the researcher considered may result in unreliable or invalid data were excluded from the study. The researcher also encountered restrictions with regard to the access of 'in house' publications, through containing sensitive information, which limited the number of publications and data that were available to the researcher.

#### **3.8.5 Analysing data**

To analyse the primary and secondary data, the researcher used the complexity strategy matrix (Boulton and Allen, 2004) which was established in the literature review. The matrix provided a degree of control over the data, and negated to an extent, the subjectivity and potential lack of control by the researcher (Fisher, 2007; Saunders et al., 2007). In order to assess the data, the researcher classified the data into data themes that emerged from the literature review which are indicated in table 3.9. These data themes emerged from the key concepts, which are outlined in the summary of the complexity strategy matrix in the literature review (section 2.7.4.1.4). For example the complexity strategy matrix shows that the IPO environment data theme corresponds to the Fitness Landscape, Tipping Points and Co-evolution. The emergence concept is reflected through the decision making data theme. The self organisation and Learning organisation concepts was reflected through the data themes of communication, creativity and risk and culture of the IPO.

This method to analyse and evaluate responses according to preselected categories or themes, is not unusual in business research (Miles and Huberman, 1994; Fitzgerald, 1997; Wynekoop and Russo, 1997). In addition, to assist the analysis of the data, as previously stated (section 3.8.1) the interview questions were not only linked to the CAS concepts but also to the associated data theme (table 3.6).

Table 3.9: Data themes compared to the elements of the complexity strategy matrix

| Data Themes                          | CAS Behaviours/Concepts   |
|--------------------------------------|---|
| IPO Environment                      | <div> { Fitness Landscape Tipping or bifurcation points Co-evolution } </div> |
| Decision Making                      | — Emergence   |
| Communication                        | <div> { Self-organisation Learning Organisation } </div>                      |
| Creativity, Innovation & Risk        |   |
| Culture                              |   |
| <div> Complex Adaptive System </div> |   |

### 3.8.5.1 Coding of data

In order to mine the data, the researcher used NVivo software, which was considered suitable for narrative style presentations of the findings, which are associated with qualitative research (Miles and Huberman, 1994; Fitzgerald, 1997; Myers, 1997; Urquart, 1998). NVivo also allowed the researcher the opportunity to run ad hoc queries and analysis (Fisher, 2007; Gibbs, 2009).

In the first instance, the researcher populated NVivo, with both the primary and secondary data. This consisted of audio recordings and transcripts (an example is shown in Appendix 2), for the primary data, and PDF's of the secondary data. Subsequently the uploaded files were coded by the researcher. The data was coded into NVivo nodes that related to the data themes, which is shown in figure 3.6, with the relevant literature referenced. Each data theme node formed a set of 'tree nodes' which broke down the data into relevant sub-themes. An example of which is shown in figure 3.7. As a means to provide meaning and understanding to the coding, the researcher also used the memo facility in NVivo (figure 3.8), to note thoughts, which could be referred to at a later date.

Whilst coding the data, the researcher went to great efforts not to take any of the primary or secondary data out of context, and to ensure the analysis of the data was, as much as possible, objectively evaluated and therefore free from the researcher's personal values. The researcher also recognised the limitations of the secondary data in light of the needs of the primary user.



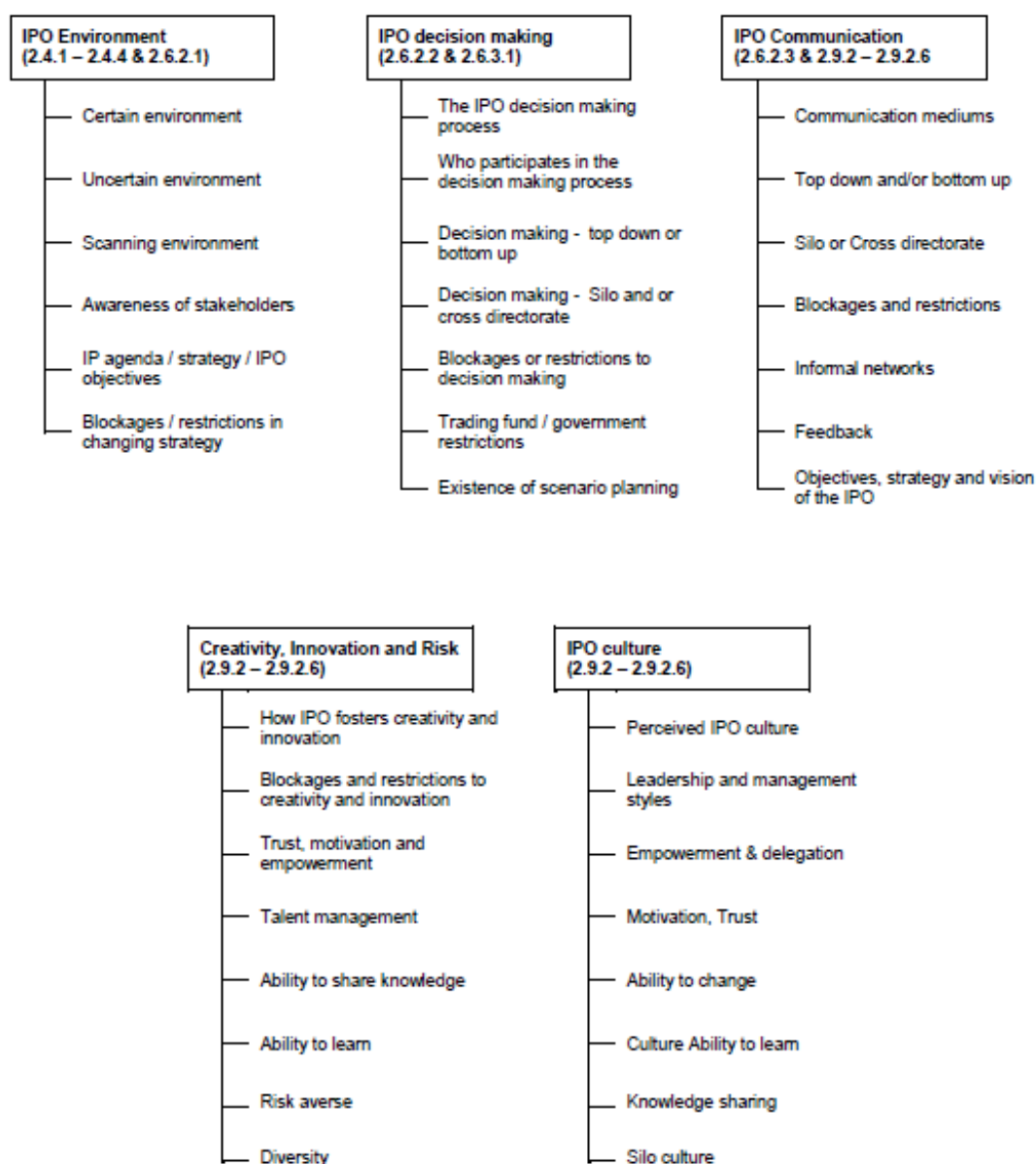


Figure 3.6: NVivo nodes and high level coding (source NVivo)



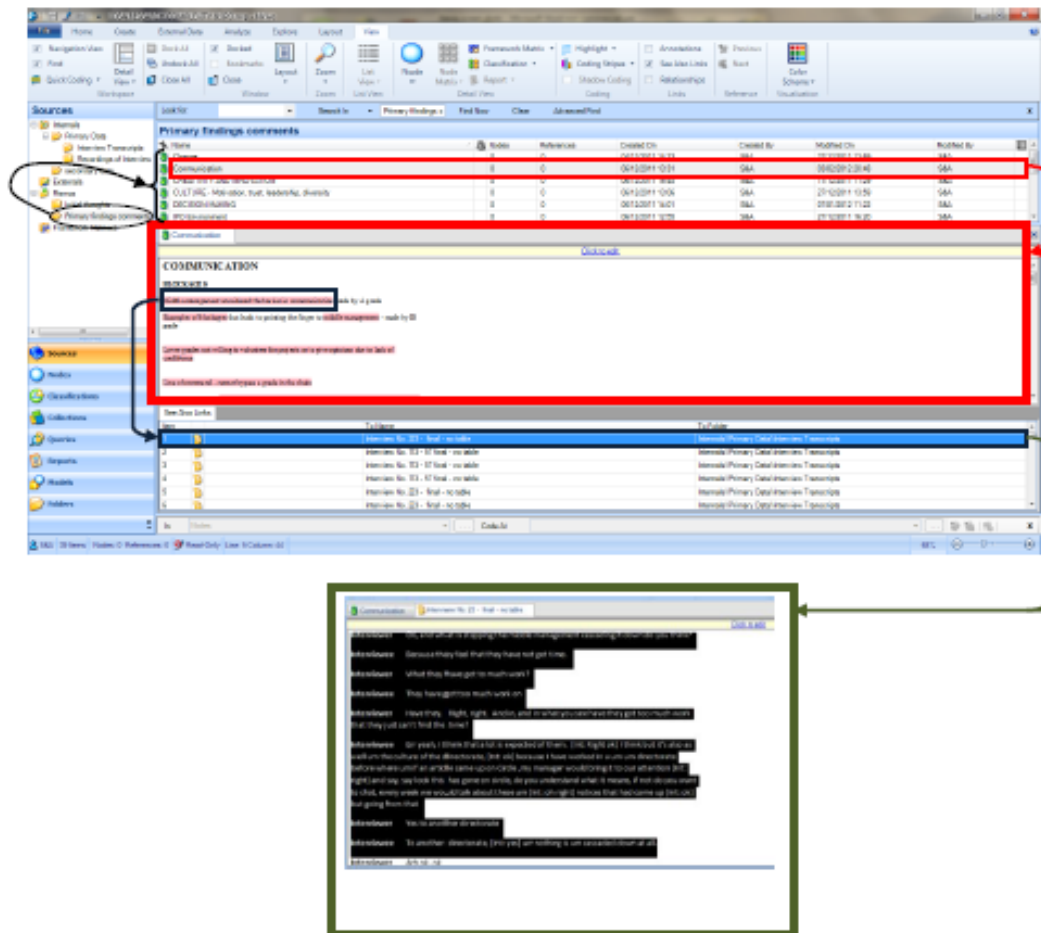


Figure 3.8: Researchers aide memoir using NVivo memos (source NVivo)

### **3.9 Ethical considerations of the researcher**

As part of the research process, the researcher ensured a neutral stance was adopted as far as possible, during all aspect of the process. As such, the researcher ensured that impact of personal values and expectations were minimised, and as such remained objective and considered the rights of both direct and indirect participants.

The study was initiated, in light of the CEO of the IPO agreeing to the researcher's request, to use the IPO as a case study (Appendix 3). At this point the researcher reinforced that the study would be subject to the ethics and confidentiality rules laid down for academic research. In addition, security clearance from the researcher's role at the Ministry of Defence, allowed the researcher swift access into the IPO. It should also be noted that whilst the CEO indicated that he would interested in seeing the results, the study was free of any conditions or requirements from the IPO.

As stated previously (section 3.8.3), participants were chosen randomly and before consent was obtained the researcher provided an overview with respect to the aim of the study; that interviews would be recorded by Dictaphone; and that all data collected would be subject to the ethics and confidentiality rules laid down for academic research. Once consent was obtained, a date and time for the interview that was convenient to both parties was established. Whilst no participants refused to take part, the researcher encountered potential participants who due to prior commitments were not available when the researcher was at the IPO. In these instances, many of the potential participants provided names of colleagues who might be willing to take part. As a matter of courtesy, the researcher informed these potential participants that they would be updated later in the process.

For those that agreed to be interviewed, the researcher ensured that the participants were not under any duress during the process. The room layout was set informally, and the researcher asked questions in a non threatening or pressurising manner. The researcher was also aware that the Dictaphone

may have an inhibiting effect for some of the participants, and therefore the researcher explained carefully to each participant the reason for the Dictaphone, and that recordings would be treated as confidential and participants would remain anonymous. In addition to the audio recordings of the interviews being kept confidential, the resulting transcripts and corresponding paper and electronically stored files, were stored securely in a locked cupboard, and/or password protected laptop. Participants were also informed that the audio recordings and associated paper and electronic files would be destroyed once the study had been completed.

### **3.10 Chapter summary**

This chapter has introduced the methodology used to pursue the research aim and objectives of the study. The philosophy and approaches of this study have been justified as interpretive with a subjective ontological dimension and inductive approach, since the nature of the study was found to be investigating the perceptions and feelings of the agents of the IPO. As such the purpose of the study was therefore considered as exploratory, and the strategy followed was that of a single holistic case study in which the primary data collected was through 24 semi structured interviews, and the secondary data consisted of a combination of both documentary and survey archival data. To address the reliability, validity and objectivity of this qualitative study, the key determinants were the aim and objectives and the associated literature, in contrast to the researcher following personal preferences, which may have resulted in the validity and reliability of the study being compromised. Throughout the investigation ethical considerations have been considered, and in particular the anonymity of the participants and confidentiality of the findings and analysis have been addressed. A pilot study was conducted with a different part of the civil service, as this allowed the researcher to evaluate the interview questions and process and ensured that the data collected would meet the aim of the study. The analysis of the data was conducted using Nvivo software to code the data themes with the CAS behaviours. The next chapter discusses the findings that emerged from the data collected.

## 4.0 Analysis and Findings

### 4.1 Introduction

The main aim of this chapter is to present the major findings, obtained from the data collection, of the single holistic case study. This data was gathered as a result of the in-depth semi-structured interviews (example transcript is given in appendix 2), in addition to the secondary data relevant to the research (section 3.8.4), in order to realise the research aim and objectives.

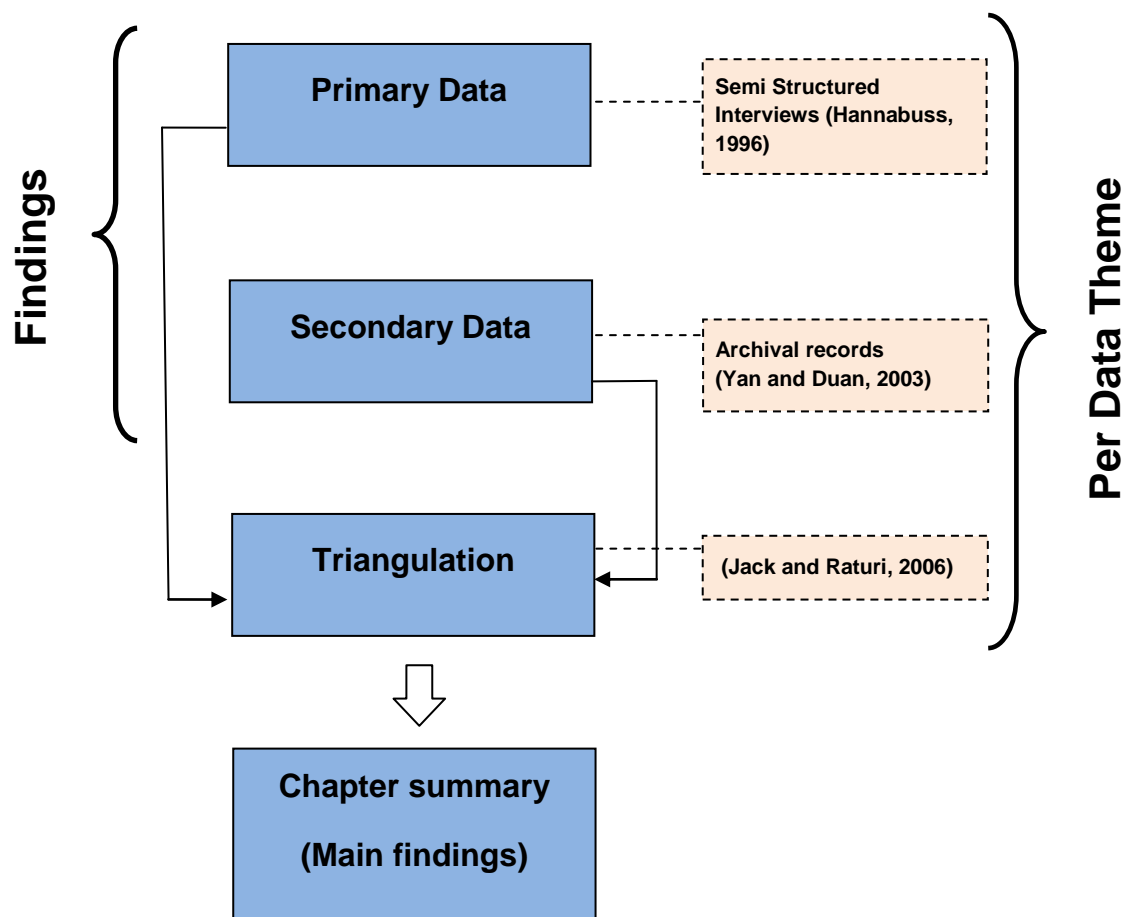


Figure 4.1: Findings road map

The findings road map shown in figure 4.1 outlines the order of the data, for each of the data themes for the IPO as follows:

- Environment
- Decision making
- Communication
- Creativity, innovation and risk
- Culture

The primary data, is the result of the semi-structured interviews conducted, and the secondary data is the outcome from archival reports; The Gowers Review of Intellectual Property (2006), Stanton Marris review of talent management (2008), Value for Money (2010), The Hargreaves Review of Intellectual Property (2011) and The IPO People Survey (2011). For each of the data themes, the data triangulation process is adopted, where data is collected at different times and from different sources of the study, which provides the reader, with the summary of the positive and negative inferences between the two sources of data (Jack and Raturi, (2006, p. 351)). The chapter concludes with a summary of the main findings, which will be taken forward to the discussion of the findings (chapter 5).

## **4.2 Findings: IPO environment**

### **4.2.1 Primary findings: IPO environment**

#### **4.2.1.1 Awareness of Stakeholders**

When the questions focused on the stakeholders of the IPO, interestingly the junior staff identified stakeholders associated with their role in the IPO, such as customers, patent and trade attorneys, IP holders and IP users and associated lobbying groups. This is in contrast to the more senior staff who identified a wider range of stakeholders, including influential stakeholders such as Ministers, Central Government, Business Innovation Skills, and HM Treasury. They also recognised that the IPO landscape consisted of influential IP organisations' such as WIPO, EPO, and OHIM, together with other National IP Offices.

“Stakeholders of the IPO include customers, those that apply for IP rights, users of IP, lobbyists, ministers, national offices, WIPO, OHIM, enforcement agencies, and brand holders” (Int 24)

“I am in regular contact with stakeholders as a result of consultation and legislative changes (Int 11)

“Anyone that the IPO engage with” (Int 20)

“customers I think” (Int 7)

#### **4.2.1.2 Stakeholders needs and engagement**

When the participants were asked about the challenges and opportunities that the IPO face in the future, many of the participants referred to the Office’s role of balancing the needs of IP holders and users, in addition to supporting innovation to benefit UK plc, and the ongoing mêlée of balancing these often conflicting needs with comments such as:

“different people use the IP system for different reasons” (Int 20)

"some of our stakeholders have got different expectations, the government sits in the middle, and we are trying to advise" (Int 5)

Participants also indicate that the IPO has undergone a culture change with comments such as:

“a culture change, we are now more outward focused we consider what the customer, the applicant, the user, actually needs from us, in the work that we do, and shape our systems to deliver that" (Int 19)

Consequently participants point to the IPO placing a greater emphasis on interacting and engaging with customers and stakeholders, with comments such as:

"we have regular meetings such as the marks and design forum, where you meet people who are not just from the trademarks and design community, and other Offices as a means to formulate collaborative IP policy" (Int 19)

However participants indicate that "it will always be a weakness that we cannot actually get to the ultimate customer easily" (Int 19), which is the person who really owns the trade mark, or creates the design. In this respect the findings pointed to the difficulties in contacting them in an attempt to raise awareness and “communicate with them in a way that they understand and



need” (Int 19). Although participants acknowledge that the IPO, in particular the Innovation directorate, are constantly making efforts to raise IP awareness, via awareness seminars and using social media for example, with both existing and potential customers. Participants also recognise the consequences of not acknowledging that customers wants and needs can change over time, particularly in light of competitors such as the EPO or OHIM, being able to offer an alternative means of seeking protection in the UK, if the IPO for example was not able to provide a speedy rights granting service. As such participants raise concerns that the office cannot rely on the status quo, and highlighted that a change in a competitors strategy such as a change in processing fees, will impact on the IPO; and as such the IPO will need to take appropriate action to prevent the potential loss of customers, with comments such as:

“we cannot rely on the fact that people will always come to us, and we cannot rest on our laurels and our history” (Int 3)

“[managers need to] make sure that whatever OHIM are doing, whatever the EPO are doing, we are either doing the same or we are doing better” (Int 3)

#### **4.2.1.3 Changing IP environment, and forecasting customer demand**

When the questions focused on the context of a changing IP environment and the impact this may have on forecasting demand, participants indicate that the IPO’s economics team use past data and trends, in order to predict future demands with comments such as:

“we try to isolate where we can see trends and think here is a variable that really drives something” (Int 14)

However a number of participants concede that although the IPO are looking at what drives demand which give the IPO something to go by, there is a question regarding the accuracy of the predictions, with comments such as:

“it is never easy to predict. We are never quite sure what drives input, upturns or downturns” (Int 8)

“the future is not predictable by the past [although] it is probably slightly better than being predicable from nothing, so we have something to go by” (Int 5)

This view that the IPO’s environment may not be predictable and certain was endorsed by participants who reflected on an unexpected surge in demand, with comments such as:

“since November, search request demand went up by 10%, nothing else changed, haven't got a clue what happened. We did not see it coming, and we are now strained in work resource” (Int 17)

Although, interestingly it was noted, that participants indicate that this increase in demand did not result in the IPO changing its strategy. In addition, participants point to the patent system sitting within an institutional framework that was fundamentally stable, with comments such as:

“there is a high degree of predictability, the patent system will probably look the same by in large in 20 years time, as it does now, they won't disappear” (Int 24)

“the scope for huge and sudden change is quite small, [although] there are bits of it that are volatile” (Int 24)

“economic shocks may affect the people who fund us, political shocks may affect how our funding may be used” (Int 24)

Participants with a managerial role point to the slow changing IP system, and also indicate that the complexity or complex nature of the IP system is not always meeting the changing demands of users. As a result participants report that IP Offices around the world have patent backlogs; and that IP legislation needs to keep apace of customers’ needs, with many participants calling for the IPO to respond to these changes, with comments such as:

“legislation has not really kept up with advances in technology” (Int 8)

“patent law national and internationally does not really change, but technology changes and we have to respond to that ... and leading some of that change” (Int 20)

Whilst participants acknowledge that the environment is changing, it was unclear as to the extent that the IPO are proactive in scanning the environment, with comments such as:

“there is some sort of horizon scanning at organisational level” (Int 20)

Participants indicate that horizon scanning was predominately at local level, and particularly in the policy directorate, who were using horizon scanning as a critical means of keeping abreast of political issues and developments in Europe, as a means to facilitate their role, which surrounded the influencing of the IP Agenda, and hence IP legislation. These comments were endorsed by some participants who question the effectiveness of the horizon scanning at strategic management level, and whether the IPO were scanning the horizon at all, in light of an unexpected increase in trade mark and patent demand, with comments such as:

“whether we are scanning it and you know and it is informing our decision making I am not sure” (Int 17)

#### **4.2.1.4 Influencing IP Agenda**

When the questions focused on the ability of the IPO to influence the IP agenda, many of the participants indicate a recent change and emphasis of the IPO, from solely a IP rights granting authority, to an organisation that is focusing more on IP policy, both from a national and international perspective with regard to the IP framework, with comments such as:

“we are moving more in a policy direction now” (Int 18)

“we need to have a system, and the architects of the system nationally and internationally, which is the best for the UK and the best for achieving our development goals” (Int 14)

Participants also indicate that the IPO places a greater emphasis on influencing the IP policy by increasing its engagement and interaction with its customers and stakeholders, as a means to formulate collaborative policy. In this respect participants comment that:

“[the IPO] cannot make policy in a vacuum” (Int 24)

“a lot of the [IP] institutions, and its processes is not completely under the control of the UK government, they are under the control of the EU or effected by international treaties” (Int 24)

Participants indicate that the IPO is using a lobbying process to establish and nurture relationships within the IP community, which involve a range of parties including European commission, national IP Offices, and industries. As a means to influence IP policy in directions favourable for the UK, and overcome the ever increasing demands on the IP systems.

Participants also report that the IPO has increased its connections with other government departments, IP institutions and national IP Offices; for example by sending directors and secondees from the IPO to working groups, committees and boards of OHIM, EPO and WIPO. As a means to proactively suggest improvements, increase the involvement of other IP organisations’, and hence influence the IP agenda. This is supported by comments such as:

“build up a network of contacts and have discussions on issues on a formal basis” (Int 19)

“if you are inside and you are as influential as you can be, then there is a good chance that how you see the world, might translate in some way towards the outcome” (Int 9)

As a means to influence the IPO agenda, participants report that the IPO have a number of strategies in place to “deal with the EPO and OHIM” (Int 10), as a means to prioritise the different issues in Europe; and the work of the IPO’s International Policy directorate. To facilitate this work participants indicate that “we have got a lot of partnership agreements in place” (Int 16), and a bilateral team who work on the relationships and experiences with other countries. Although it is acknowledged that IPO’s ability to influence varied within the IP network, and in light of the complexity of the IP system which is seen as being more complex in light of the increasing number of countries involved in negotiations, with comments such as:

“if you are in OHIM it is 1 in 27, if you are in WIPO it is 1 in 100” (Int 20)

Participants also point to the IPO's distinct advantage of being both a rights granting authority and IP policy maker, which is deemed as unique in terms of a skill set for a national IP Office. This is seen as playing to the advantage of the IPO during international negotiations, who is seen as being proactive in pushing forward new initiatives. Participants reflect that the IPO is also using its good reputation at both a national and international level as a means to increase the leverage of the IPO during negotiations, with comments such as:

"we have the strength of our rights granting background as well as having the policy in house" (Int 10)

"[the IPO] probably punches above its weight in comparison with other similar sized IP Offices around the world" (Int 8)

"the IPO is seen as one of the big Offices in terms of shaping the IP policy agenda" (Int 9)

When questioned with regard to the collaborative working of the IPO with other IP Offices, participants point to the IPO working with national patent Offices in respect of the Patent Prosecution highway, where national IP Offices acknowledge each other's work as a means to reduce duplication and hence tackle patent backlogs; and the Office's collaboration with OHIM in respect of a trade mark case management system. However some participants view the IPO's collaborative work resulting in extra work for the Office, for instance, the EPO removed technical support for a seven year old case management system for patents which resulted in the IPO building a new system within a relatively short space of time. Participants also highlight that although the IPO endeavours to build working relationships with other IP Offices, there was also the recognition that many of the IP Offices, particular the EPO and OHIM are considered competitors, in the sense that these organisations' are able to grant IP rights that cover the UK.

## **4.2.2 Secondary findings: IPO environment**

### **4.2.2.1 Awareness of stakeholders**

With respect to the awareness of stakeholders, the Gowers (2006) report pictorially illustrates through the lens of the IP policy governance in figure 4.2,

the stakeholders of the IPO, and the complexity facing the IPO in balancing the needs of stakeholders such as IP holders v IP users, and advising ministers and users of IP, with comments such as:

“help[ing] Government and business navigate their way through increasing complexity” (Stanton Marris, 2008, p. 5)

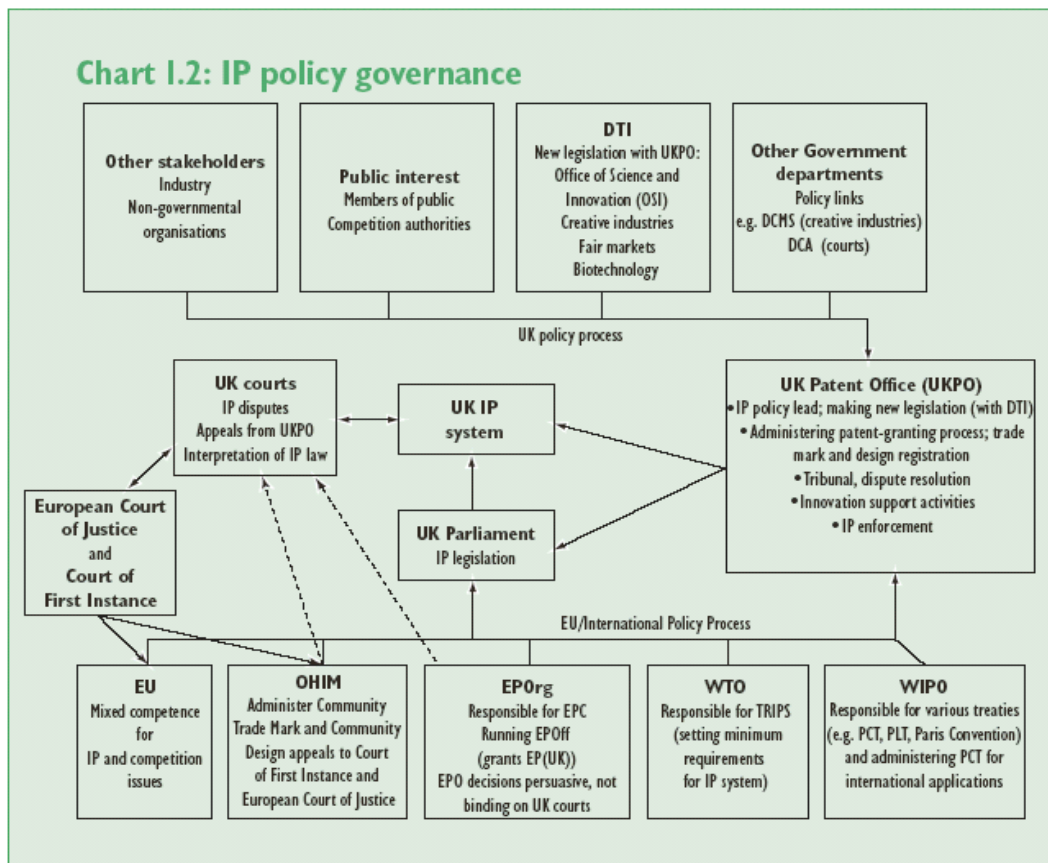


Figure 4.2 IP policy governance (source Gowers (2006, p. 17))

With respect to the IPO stakeholders Stanton Marris (2008) indicate that whilst the IPO board have a clear view of the IPO stakeholders, the remainder of the organisation had little or no view. Although this was not quite clear cut, as it was also reported that some senior managers struggled to identify IPO stakeholders with comments such as:

“even senior managers have to work hard to identify the IPO’s “customers”(whether Whitehall, businesses or patent agents)” (Stanton Marris, 2008, p. 19)

Stanton Marris (2008) also argue that the IPO board was disconnected from the rest of the Office, in that they were the “only parties with a clear view of Whitehall and the changing IP agenda” (Stanton Marris, 2008, p. 23), as shown in figure 4.3.

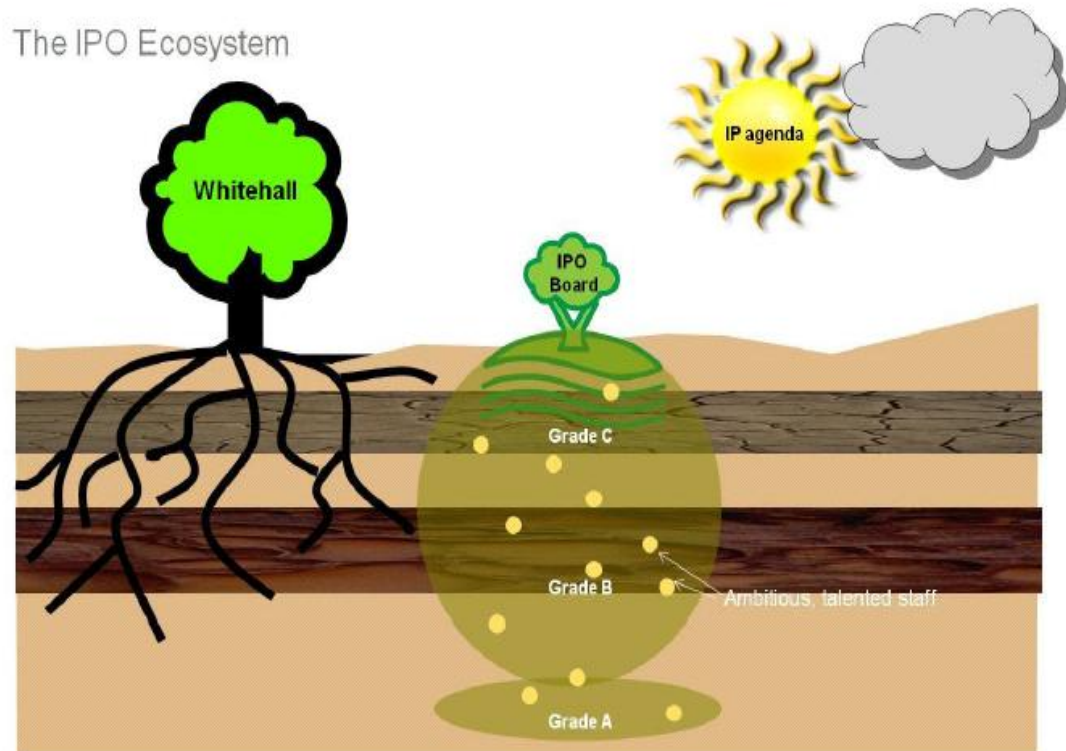


Figure 4.3: The IPO ecosystem (source Stanton Marris (2008, p. 22))

#### 4.2.2.2 Stakeholders needs and engagement

With respect to the stakeholder needs, Stanton Marris (2008) indicate that the IPO appear to focus on inward delivery rather than customer needs, and report that the IPO customers and their needs were not considered a priority by the IPO, with comments such as:

report indicate “a tendency for the IPO to focus inwards, on delivering the work in hand, rather than looking outside the IPO and to the future requirements of the IPO’s customers” (Stanton Marris, 2008, p. 18)

“throughout our discussions the question of who are our customers and what do they want, is noticeable far down the agenda” (Stanton Marris, 2008, p. 19)

The lack of customer engagement was also noted by Austin and Heath (2010), who called for the IPO to increase and develop its engagement with customers and ministers for example; and to use such engagement within the IPO planning process, with comments such as:

“not enough time and effort has historically been put into trying to engage with the customers and stakeholders at a strategic planning level, to find out what they would really like to see” (Austin and Heath, 2010, p. 64)

“increase its efforts to improve its customer contacts” (Austin and Heath, 2010, p. 6)

“properly engage with stakeholders and customers in developing the plan” (Austin and Heath, 2010, p. 66)

#### **4.2.2.3 Changing IP environment and forecasting customer demand**

With regard to the changing environment the secondary data both Gowers (2006) and Stanton Marris (2008) observe that that IP legislation has not kept up with technology changes, with comments such as:

“new technologies such as genetics, software and databases all require IP protection, but do not fit easily into existing categories” (Gowers, 2006, p. 26)

“with the digital age upon us, the concept of ‘intellectual property’ per se is undergoing a paradigm shift, and it would be naive to think that the IPO, might carry on as before” (Stanton Marris, 2008, p. 5)

Whilst Stanton Marris (2008) calls for the IPO to become more responsive to change, it also acknowledges that the IPO is currently a long way from building “a culture that recognises the need to change to meet changing external requirements” (Stanton Marris, 2008, p. 5). As such Stanton Marris (2008, p. 3) points to the IPO bolstering its policy capability, and the need for it to “become both wider and deeper”, and hence become more responsive to change, with comments such as:

“a need for the capability of the IPO to reflect the changes in the intellectual property environment” (Stanton Marris, 2008, p. 3)

The Hargreaves Review (2011) also highlights that one of the many strains on the IP system is the increasing number of patent applications being filed



worldwide, and the growing backlogs at most major patent Office's, which are predicted to increase. Hargreaves (2011) report that the backlogs are seen as potentially generating a spiral of ill effects, with comments such as:

“they impose costs by increasing the uncertainty of business decisions, impeding competition or giving a patent application an unfair advantage in negotiations” (Hargreaves, 2011, p. 55)

In addition, the pressures on Patent Offices to reduce backlogs are viewed as potentially leading to “the grant of even more low quality patents” (Hargreaves (2011, p. 23), through the increased filing of defensive applications. As such, Austin and Heath (2010) call for the IPO to continue its work with other IP Offices in improving their ability to forecast demand. Austin and Heath (2010) also highlight the apparent lack of horizon scanning within the IPO's planning and strategy process, and calls for its inclusion as a means for the IPO to identify changes in the IPO's environment, with comments such as:

“horizon or environmental scanning does not appear to be a feature of the previous planning process” (Austin and Heath, 2010, p. 64)

“undertake horizon scanning as part of it planning work” (Austin and Heath, 2010, p. 66)

#### **4.2.2.4 Influencing IP Agenda**

The overarching view from the secondary data is that the IP Framework in which the IPO sit is considered complex. It is within this complexity that the IPO attempts to fulfil its role of developing and maintaining an IP framework that not only balances the needs of the right holders and end users, but benefits and stimulates the UK economy via supporting innovation and promoting economic growth; and hence ensure IP legislation meets ever changing demands such as the “increase in counterfeiting and other forms of illegal trade” (Gowers Review, 2006, p. 24).

The complex web of international treaties, agreements and directives are pictorially represented in figure 4.2, highlight “the network of international IP treaties [that] limits the ability of individual countries to go their own way” (Hargreaves, 2011, p. 21). As such Hargreaves (2011) indicate that:

“the UK requires strong and consistent action at the international level”  
(Hargreaves, 2011, p. 21)

The complex web of international treaties is further compounded by the complex relationships between member states / countries and their perceived needs. This has resulted in exceedingly slow change at an international level, and is reportedly hindering the harmonisation of national IP laws, with comments such as:

“harmonisation of national IP law has lagged behind the integration of markets” (Gowers Review, 2006, p. 24)

“for over 30 years, there has been the ambition to create a unitary ‘Community Patent’ for Europe to reduce costs for business. There have been many failed attempts to broker agreement” (Gowers Review, 2006, p. 25)

In this respect the secondary data acknowledges the work the IPO has undertaken with other IP Offices, such as working with other Offices in respect to demand forecasting, and the standardisation of IT and databases (Stanton Marris, 2008); taking the lead to promote work sharing measures such as Patent Prosecution Highway as a means to reduce the amount of work that is duplicated at patent Offices around the world and hence help tackle patent backlogs (Hargreaves, 2011, p. 56); and using an evidence based position during international negotiations (Hargreaves, 2011, p. 59). However, as highlighted by the People Survey (2011), whilst cooperation between the IPO and other national Offices was undertaken as a means of reducing the duplication of work internationally as a means to speed up the patent process, the Survey reports that for IPO staff work increased locally, and there is a difficulty in establishing any benefits or efficiencies in the process.

As such, whilst Austin and Heath (2010) report that the IPO are taking a more robust approach to policy at national level and have seen their reputation increase, with comments such as:

“[stakeholders] observe[ed] an improved policy role of the Office in Whitehall”  
(Austin and Heath, 2010, p. 10)

“[IPO] are seen as the Government body with an understanding of intangible assets” (Austin and Heath, 2010, p. 8)

This was in contrast to “the international front [where] a more mixed picture appeared” (Austin and Heath, 2010, p. 10), in which both Stanton Marris (2008) and Austin and Heath (2010) report “strong support for policy role in Europe and internationally” (Austin and Heath, 2010, p. 10), as a means to influence the wider IP Agenda. As such both Stanton Marris (2008) and Austin and Heath (2010) concur that the IPO should utilise its ability to be “very good at building trust” (Value for Money, 2010, p. 9); and its reputation for a world class quality and speedy rights granting service, as a means to influence the IP Agenda (Austin and Heath, 2010).

The secondary data also highlights a need for the IPO to recognise that it is influenced by others, with comments such as:

“[the IPO] is no longer an island and needs to take into account developments taking place in other bodies such as the WIPO, EPO or OHIM that may impact upon the Office” (Austin and Heath, 2010, p. 64)

In particular the secondary data pointed to the inability of the IPO to control the income it received from EPO renewals, which will have a significant effect on the IPO income stream should the EPO change the existing agreement (Gowers Review, 2006; People Survey, 2011).

#### **4.2.3 Triangulation of IPO environment findings**

The positive and negative inferences between the primary and secondary data (Jack and Raturi, 2006, p. 351) are shown in table 4.1.

Table 4.1: Triangulation of the IPO environment findings

| IPO ENVIRONMENT  |   |  |
|--|---|--|
| Awareness of stakeholders  |   |  |
| Primary Research   |   | Secondary Research   |
| <ul style="list-style-type: none"> <li>Staff of the IPO are aware of one or more of the Offices stakeholders, those at a more senior level acknowledge a wider range of stakeholders.</li> </ul>   | + | <ul style="list-style-type: none"> <li>Staff at senior levels have a clear view of the IPO stakeholders, while the rest of the Office had little or no view of IPO stakeholders.<sup>[S]</sup></li> </ul>  |
| Stakeholder needs and engagement   |   |  |
| Primary Research   |   | Secondary Research   |
| <ul style="list-style-type: none"> <li>The IPO are more outward looking and seeking to identify customer needs and potential new services; to formulate and develop collaborative policy.</li> </ul>   | - | <ul style="list-style-type: none"> <li>Tendency for IPO to be inward looking with customers needs low on the agenda.<sup>[S]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>The IPO is making efforts to engage with stakeholders, but struggle with engaging the ultimate customer, the IP holder.</li> </ul>  | + | <ul style="list-style-type: none"> <li>The IPO needs to increase its efforts to improve its customer engagement and contacts.<sup>[V]</sup></li> </ul>   |
| Changing IPO Environment and forecasting customer demand   |   |  |
| Primary Research   |   | Secondary Research   |
| <ul style="list-style-type: none"> <li>Horizon scanning is being used but considered 'patchy' across the organisation.</li> </ul>  | - | <ul style="list-style-type: none"> <li>Horizon scanning is not part of the planning process.<sup>[V]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>Legislation has stagnated whilst technology has changed significantly, leading to the IPO and commentators to question whether the IP system is fit for purpose.</li> <li>The role of the IPO is to balance the needs of the right holder and users, and the problems associated with patent backlogs in the UK and worldwide.</li> </ul> | + | <ul style="list-style-type: none"> <li>Globalisation and technological advances, in conjunction with slow changing IP legislation has resulted in the landscape of the IP Agenda changing significantly over recent years, putting additional strain on the IP System.<sup>[G,S]</sup></li> <li>Patent backlogs worldwide have compounded the ability of the IPO to assist in developing an IP system that benefits UK plc.<sup>[H]</sup></li> </ul> |
| <ul style="list-style-type: none"> <li>The scope for large and sudden change is small, which is in part due to the certainty surrounding the institutional IP framework.</li> <li>The IPO is considered to have a relatively predictable environment.</li> </ul>   | - | <ul style="list-style-type: none"> <li>The IPO to change to meet changing external requirements.<sup>[S]</sup></li> <li>The IPO is far from having a culture that recognised the need to change to meet the external environment.<sup>[S]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>The inability of the IPO to predict input.</li> <li>Increased input levels at time when demand was considered to be decreasing – no change of strategy required.</li> </ul>   | + | <ul style="list-style-type: none"> <li>The IPO to improve demand forecasting which is considered to be inadequate / rudimentary.<sup>[V]</sup></li> </ul>  |
| Influencing IP agenda  |   |  |
| Primary Research   |   | Secondary Research   |
| <ul style="list-style-type: none"> <li>The IPO has a good reputation due to</li> </ul>   | + | <ul style="list-style-type: none"> <li>Externally the IPO is highly regarded</li> </ul>  |

|  |   |  |
|--|---|--|
| its core of expertise; close working relationship of the rights granting and policy areas; high customer service and patent quality, which allowed the Office to punch above its weight.   |   | and considered as knowledgeable; good at building trust; with customers happy with right processing services. <sup>[S,V]</sup>   |
| <ul style="list-style-type: none"> <li>The IPO exists within an IP framework where legislation cannot be made in a vacuum.</li> </ul>  | + | <ul style="list-style-type: none"> <li>The complex nature of the IP policy governance and individual countries cannot change legislation in isolation.<sup>[H,G]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>The IPO is increasing its policy function, in conjunction with improving its connections with other government departments.</li> <li>The IPO are using its connections with OHIM, WIPO, EPO and other IP Offices through boards and working groups. to influence the IP agenda from the inside.</li> <li>The IPO are working with other Offices through the harmonisation of practices, IT and shared working.</li> </ul> | + | <ul style="list-style-type: none"> <li>The IPO facilitates an improved policy role in Whitehall, and supports a more influential policy role of Government in Europe and Internationally.<sup>[V]</sup></li> <li>The IPO is working collaboratively with other Offices to forecasting demand, and solutions to reduce backlogs.<sup>[S,H]</sup></li> </ul> |
| <ul style="list-style-type: none"> <li>There is a threat of competition from competing Offices such as the EPO and OHIM.</li> </ul>  | + | <ul style="list-style-type: none"> <li>The IPO need to recognise the impact of WIPO, OHIM and EPO.<sup>[V]</sup></li> <li>The IPO has a lack of control over the income it receives from EPO renewals.<sup>[G,P]</sup></li> </ul>  |

#### KEY TO TABLE

|   |   |
|---|---|
| <b>Primary research:</b><br>Semi-Structured Interviews<br><b>Secondary Research:</b><br>Archival documents:<br>G - Gowers (2006)- Provides a snap shot of the wider IP system in which the IPO sits<br>S - Stanton Marris (2008) - Assessment of the capability of the IPO to meet changes in the IP environment<br>V – Austin and Heath (2010) - Review of internal processes at the IPO<br>P - People Survey (2011)-Staff perceptions on key drivers of the IPO<br>H - Hargreaves (2011)- Provides a snap shot of the wider IP system in which the IPO sits | <b>+ = Convergence</b><br><br><b>- = Divergence</b><br><br><b>n/a = Neither convergent or divergent</b> |
|---|---|

## 4.3 Findings: IPO decision making

### 4.3.1 Primary findings: IPO decision making

#### 4.3.1.1 Planning, strategy, vision and targets

When the questions focused on the planning and decision making process, the overarching view from the participants is that the decision making is primarily driven and controlled from the top of the organisation. As such participants indicate that the IPO's strategy process relies predominately on

planning, budgets and an array of operational targets, which culminate in the delivery of the corporate plan, with comments such as:

"our strategy is our 5 year plan, the corporate one is the one we do on an annual basis, although [the CEO] would like it to be a 5 year plan, a rolling 5 year plan" (Int 5)

"a key set of targets for each financial year, which help shape how we prioritise" (Int 16)

"then our business plan feeds into our corporate plan" (Int 18)

When participants were asked in detail about the corporate plan and the overall effectiveness of the process, participants question the emphasis of targets and the effectiveness of the process, with comments such as:

"there is a question mark over whether the targets set at the outset are right for the medium and longer term" (Int 20)

"we tend to be quite reactive, and react to deliver short term successes and targets;[and] we tend to take our eye off the ball for the long term" (Int 20)

As one participant points out with regard to the 10 – 3 – 1 strategy process, "there was a standing joke that we deliver the 1's before we thought about the 3's, but never even get around to the 10's" (Int 20).

Participants also indicate that the planning process surrounds stability, and the use of historic trends to predict future demands, with comments such as:

"planning by its very nature has to rely on some kind of stability" (Int 18)

"we tend to extrapolate and target setting then tends to be a combination of trying to work those numbers to discrete projects or new services we want to launch" (Int 16)

However, participants did indicate that recently the IPO experienced an unexplained increase in demand. When questioned to why the IPO did not see this increase, participants point to problems management have with obtaining timely management information, and the ongoing pursuit of the IPO

economics team to identify variables that may have an impact on the future demand predictions.

#### **4.3.1.2 Scenario planning**

When the questions focused on whether the IPO used any form of scenario planning as part of this overarching planning process, the responses were mixed, in the sense that on the one hand, participants commented that the IPO did not need to plan for extremes, and questioned the need to use scenario models, and on the other that they were not very skilled in this area, in light of the some participants indicating that the IPO did not need to plan for extremes or disruptive shocks. This view was endorsed with comments such as:

“responding to challenges well, as long as they are, within our comfort zone, within the environment that we understand” (Int 20)

#### **4.3.1.3 Top down, command and control**

In response to questions that focus on the mechanisms of the decision making process, the consensus from the participants is that the decision making process is primarily top down. However, some participants indicate that this is in contrast to the bottom up approach that was taken in the past, to the extent that the participants questioned whether this change of approach may be detrimental to the IPO with comments such as:

“I think everything is top down, we used to have bottom up approach in the corporate planning process” (Int 17)

“we have made subtle changes that might be to your detriment I don’t know” (Int 17)

Participant’s responses also indicate that this hierarchical command and control approach is evident in most of the directorates, in which participants made reference to the fact that it is:

“vitally important that you must never miss out a step in that chain of command” (Int 11)

In contrast this view is tempered by some participants, who indicate that the control was lessening in some areas, as a result of recently appointment of new directors. Although the general consensus from the participants indicate that the prevailing behaviours within a directorate were a reflection of the directors, in which the patent's directorate was considered to be particularly hierarchical, with comments such as:

"how the directors likes to work so everyone below them works in the same way" (Int 11)

"they are really command and control in patents, everything, every decision has to go through [the director's] Office" (Int 5)

Numerous participants indicate that this command and control approach was evident in the recent IPO Improve Program. Participants comment that decisions often required confirmation from project/program board, operational committees and even the IPO Board, even though more often than not, a director was present at each level, leaving participants frustrated at the slow decision making. This decision making by committees and groups is referred to by one participant as "institutional inertia" (Int 14). This is reflected by a number of participants who refer to the bureaucratic nature of the IPO board, in which consent is needed at all levels with comments such as:

"it has gone to programme board that have looked at it, and now it has gone to IPOB who are going to look at it, it is almost the same people, looking at it three times" (Int 13)

#### **4.3.1.4 Decisions and IPO Board (IPOB)**

When the questions focused on the decisions of the IPO board (IPOB), the comments from the majority of the participants reflect the IPO as being a "slow lumbering beast" (Int 13) and perceive the decision making and problem solving processes of the IPO, as bureaucratic, very analytical and consequentially very slow, where decisions are primarily made by committee. Numerous participants describe the process of submitting a paper to the IPO Board as one which includes obtaining their "immediate line manager approv[al]" (Int 16), in which they would be expected to write a formal paper, which would be submitted to the board, assuming that their director was



happy to sponsor it and put it forward. This is primarily followed by a process of reiteration by the board, concerning requests for more information and further reviews, which a few participants reflecting that the process has the impact of slowing everything down and often leading to a stalemate position. As a result participants reflect that the slow decision making of the IPO board is in light of the board's propensity to be too analytical and cautious when it comes to decision making, with many of the responses pointing to the board often showing unwillingness to take a risk, with comments such as:

"a reflective, deliberative board, which spends quite a lot of time before coming to a decision" (Int 24)

"analyse the life out of things" (Int 11)

"unwilling to sign on the dotted line" (Int 14)

In contrast participant's responses indicate that speed at which the IPO board makes a decision, also reflected whether the decision surrounding processes or people. Comments indicate that when the IPO board had to make a decision involving a new system involving processes, the decision was made relatively quickly, which was in contrast to decisions surrounding people, with comments such as:

"a process thing, shall we introduce like a new IT system, it is black and white it is a yes and a no .... people we dither" (Int 11)

Participants also point to the lack of prioritisation with regard to decisions that are put before the IPO Board, to the extent that it was deemed that the IPO Board were involved with a wide range of office decisions, with comments such as:

"[the IPO Board] seem to make a decision on everything" (Int 5)

"if you were going to change the toilet rolls, you will need to put a paper to IPOB" (Int 5)

In response, participants call for bold and assertive leadership by the IPO board, and for the board to delegate responsibility and empower staff, in an attempt to quicken the decision making process.

#### **4.3.1.5 Trading Fund**

When the questions focused on the funding status of the IPO, many of the participants are of the view that the trading fund status of the IPO, restricts what and how the IPO can invest in, in light of the “complexity and uncertainty from the actual organisational status of a trading fund” (Int 15).

### **4.3.2 Secondary findings: IPO decision making**

#### **4.3.2.1 Planning, strategy, vision and targets**

The secondary research reports that it is the secretary of state who determines the policy framework that the IPO operate within, in which the strategic objectives, key financial and performance targets are agreed. In which the annual planning process follows that of the corporate planning cycle. However, Austin and Heath (2010) considered that the IPO corporate plan, was not a plan, but merely a set of ambitions that were intended to improve things for both the user and the UK economy, in which the steps were not always comprehensively plotted, or how they contributed to the overarching strategic goal (Austin and Heath, 2010, p. 66), with comments such as:

“the corporate plans and reports are largely narrative based and lack numbers and data to bring the plans alive” (Austin and Heath, 2010, p. 64)

Austin and Heath (2010, p. 62) therefore argue, that it was one of the few areas that was under resourced in the IPO, in that the IPO did not have a sufficiently number of staff skilled in projecting the strategic stance sufficiently well, and therefore focused their efforts instead on the completion of short term targets. In addition, Austin and Heath (2010) indicate that the IPO face a number of challenges surrounding the obtaining of management information (Austin and Heath, 2010, p. 70).

#### **4.3.2.2 Scenario planning**

Austin and Heath (2010) also note that the IPO is deficient from the planning and strategic standpoint, specifically surrounding the extent the IPO use relevant management information with comments such as:

“paucity [or rareness] of good management information currently developed and used within the Office” (Austin and Heath, 2010, p. 4)

As such Austin and Heath (2010) call for the IPO to rectify the matter, by developing and using appropriate management information, and using scenario planning, to provide a context for the data, with comments such as:

“develop[ment of] better management information across the whole Office” (Austin and Heath, 2010, p. 4)

“[IPO planning to include] improved use of data and measurement in plans and reports” (Austin and Heath, 2010, p. 124)

“embrace sound context setting/scenario planning” (Austin and Heath, 2010, p. 6)

#### **4.3.2.3 Top down, command and control**

The overarching view from the secondary data was that management style of the IPO was one of command and control, with the prominence of a top down planning process, via a traditional corporate planning cycle, with comments such as:

“the chief management style is perceived by most to be one of command and control” (Stanton Marris, 2008, p. 13)

“[the IPO] sought to follow the more traditional process for creating a plan, using both the top down and bottom up approaches” (Austin and Heath 2010, p. 63)

However, concerns are raised surrounding the production of the corporate plan, in which Austin and Heath (2010, p 68) indicate that the IPO has moved to a pronounced civil service bureaucratic approach, which is associated with form filling and meetings. As such the IPO are encouraged to develop a more inclusive approach, in light of comments such as: “the whole management

structure needs to engage in the development of the plans since differing levels of detail in the plans [was] needed at different levels” (Austin and Heath, 2010, p. 64).

#### **4.3.2.4 Decisions and IPO Board (IPOB)**

The general consensus from participants responses, indicate that the decision making process is slow, and often an iterative process, in light of the IPO Boards risk averse nature.

“decision making processes are hugely drawn out and iterative” (People Survey, 2011)

“[the IPO Board] seem to be unable to make decisions and appear completely risk averse” (People Survey, 2011)

“[iterative process results in] reach[ing] a stage where the actual rationale behind an action and its effects in the real world have been completely forgotten, overlooked or simply not understood” (People Survey, 2011)

The secondary data also report that the IPO board often fail or simply do not address tough decisions (Austin and Heath, 2010, p. 23). This is seen as a deliberate and/or lack of prioritisation of the IPO board, with Austin and Heath (2010) reporting and observing that “a number of difficult strategic areas remain to be addressed” (Austin and Heath, 2010, p. 25). The People Survey (2011) reflect Austin and Heath (2010) comments, and indicate that the IPO Board do not like to make difficult decisions, and surrounds a process that is slow, iterative and risk averse (People Survey, 2011). Stanton Marris (2008) also reflect this slow and reflective process with comments such as:

“largely to a universal desire [for the board] to foresee every eventuality and negate risk in every area of business” (Stanton Marris, 2008, p. 17)

Stanton Marris (2008) also reflect that this behaviour of the IPO Board is reflective of the ‘copper bottomed’ approach to patent examining that it perceived had crept into all areas of the IPO, and where the technical expert/manager who is a perfectionist, risk averse, unable to delegate, and unwilling to collaborate.

In response to the inertia of the IPO Board, the secondary data calls for the more appropriate prioritising of IPO Board decisions, the delegation and empowerment of management below the board, with comments such as:

“better prioritisation of activities by the Board” (People Survey, 2011)  
 “the Board need to delegate power and decisions to the senior management board to allow them to focus on more important decision” (People Survey, 2011)

“badly needs some bottom-up management rather than top-down autocracy we have at the moment” (People Survey, 2011)

“at the moment, a lot of time is spent drafting "strategies" and "purposes" but no one seems able to articulate a compelling vision” (People Survey, 2011)

#### 4.3.2.5 Trading Fund

The secondary data report conclude that the IPO management views the IPO's trading fund status as one which is restrictive, and report that the IPO consider that the trading fund “appear[s] to restrict the collection of statutory fees to the traditional IP rights” (Austin and Heath, 2010, p. 33). However this is in contrast to the secondary data that reports that the IPO would appear to overlooking or dismissing the benefits from the flexibility that a trading fund status offers, with comments such as:

“trading fund agency has a greater capacity to respond quickly to changing circumstances and to plan longer term when making investment decisions” (Austin and Heath, 2010, p. 16)

### 4.3.3 Triangulation of the IPO decision making findings

The positive and negative inferences between the primary and secondary data (Jack and Raturi, 2006, p. 351) are shown in table 4.2.

Table 4.2: Triangulation of the IPO decision making findings

| DECISION MAKING   |   |  |
|---|---|--|
| Planning, strategy, vision and targets.   |   |  |
| Primary Research  |   | Secondary Research   |
| <ul style="list-style-type: none"> <li>The IPO strategic process relies on a planning, budgets and targets, in which predictability and stability of the</li> </ul> | + | <ul style="list-style-type: none"> <li>The planning processes follow the corporate planning cycle.<sup>[V,G,H]</sup></li> <li>The corporate plan is merely a set of</li> </ul> |

|   |   |  |
|---|---|--|
| environment are the main drivers of demand, which culminating in the delivery of the corporate plan.  |   | ambitions rather than a clear set of actions. <sup>[V]</sup>   |
| <ul style="list-style-type: none"> <li>The underlying drivers are recognised as being problematic, with respect to forecasting.</li> </ul>  | - | <ul style="list-style-type: none"> <li>The IPO do not have staff skilled in strategic context.<sup>[V]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>The IPO focus primarily on short term targets, at the expense of long term targets.</li> </ul>   | + | <ul style="list-style-type: none"> <li>The IPO focuses on short term targets.<sup>[V]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>Problems associated with obtaining timely management information and the unwillingness to use the information to stimulate management debate.</li> <li>Target setting revolves around historic trends and the extrapolation of data to predict future demands.</li> <li>The forecasting process involves the IPO Economics team attempting to identify variables that may have an impact on future demand predictions.</li> <li>Recent increases in patent and trade mark demand were contrary to predictions, resulted in the IPO acknowledging uncertainties in respect to what drives input.</li> </ul> | + | <ul style="list-style-type: none"> <li>The IPO faces challenges surrounding obtaining management information, and hence good management information was rare throughout the organisation.<sup>[V]</sup></li> </ul>   |
| <b>Scenario Planning</b>  |   |  |
| <b>Primary Research</b>   |   | <b>Secondary Research</b>  |
| <ul style="list-style-type: none"> <li>The IPO is not skilled at scenario planning, and do not believe that they require this skill as they do not plan for extremes.</li> </ul>  |   | <ul style="list-style-type: none"> <li>The availability and use of good management information was considered to be rare. In this respect, the IPO were encouraged to improve their management information and embrace sound scenario planning.<sup>[V]</sup></li> </ul> |
| <b>Top Down, command and control</b>  |   |  |
| <b>Primary Research</b>   |   | <b>Secondary Research</b>  |
| <ul style="list-style-type: none"> <li>The corporate planning process is primarily top down, and has moved from a bottom up approach in the past.</li> </ul>  | - | <ul style="list-style-type: none"> <li>The IPO to have a bottom up management approach, in order to capture the detail from the lower levels, and hence have a collective approach to the planning process.<sup>[V]</sup></li> </ul>                                     |
| <ul style="list-style-type: none"> <li>The research indicates a hierarchical line of command and control that is rigidly followed.</li> <li>The decision making process of the IPO Board follows a bureaucratic approach, in which consent is obtained through formal papers sponsored by a director.</li> <li>The IPO board members were also present on numerous operational committees and project boards at all levels.</li> </ul>  | + | <ul style="list-style-type: none"> <li>The IPO management style is primarily command and control.<sup>[S]</sup></li> <li>The IPO have moved to a more pronounced civil service bureaucratic approach associated with form filling and meetings.<sup>[V]</sup></li> </ul> |

| Decisions and IPO Board (IPOB)  |     |  |
|---|-----|--|
| Primary Research  |     | Secondary Research   |
| <ul style="list-style-type: none"> <li>The IPOB is considered a reflective and deliberative board that takes account of all options; and is considered risk averse.</li> <li>The decisions are particularly slow regarding people issues.</li> <li>Where decisions could not be made, the board invariably asked for more information, and/or further recommendations.</li> </ul> | +   | <ul style="list-style-type: none"> <li>The decision making process is slow and iterative, and which takes account of all available options; and indicates the risk averse nature of the Board.<sup>[S,P]</sup></li> <li>The IPO board fail to address tough decisions and/or in some cases will not make a decision.<sup>[V]</sup></li> <li>The “copper bottom” approach to patent examining creeps into all areas of business slowing it down.<sup>[S]</sup></li> </ul> |
| <ul style="list-style-type: none"> <li>Calls to delegate and empower staff to quicken the decision making process and lessen the burden on the IPO Board.</li> </ul>  | +   | <ul style="list-style-type: none"> <li>Calls for delegation and empowerment to cut through the paralysis of decision making by the IPO.<sup>[P]</sup></li> <li>The level of corporate decision making was questioned.<sup>[P,V,S]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>When decisions by the IPOB were quick, they were either within their comfort zone or surrounded procedures and processes.</li> </ul>   | n/a |  |
| Trading Fund  |     |  |
| Primary Research  |     | Secondary Research   |
| <ul style="list-style-type: none"> <li>The trading fund status of the IPO is considered to dictate the restrictions associated with what the IPO can invest in.</li> </ul>  | -   | <ul style="list-style-type: none"> <li>The trading fund status restricts fee generation, although it was considered to give greater capacity to respond to changes.<sup>[V]</sup></li> <li>The IPO is not using the flexibility associated with the trading fund status.<sup>[V]</sup></li> </ul>  |

#### KEY TO TABLE

|   |   |
|---|---|
| <b>Primary research:</b><br>Semi-Structured Interviews<br><b>Secondary Research:</b><br>Archival documents:<br>G - Gowers (2006)- Provides a snap shot of the wider IP system in which the IPO sits<br>S - Stanton Marris (2008) - Assessment of the capability of the IPO to meet changes in the IP environment<br>V – Austin and Heath (2010) - Review of internal processes at the IPO<br>P - People Survey (2011)-Staff perceptions on key drivers of the IPO<br>H - Hargreaves (2011)- Provides a snap shot of the wider IP system in which the IPO sits | <b>+ = Convergence</b><br><br><b>- = Divergence</b><br><br><b>n/a = Neither convergent or divergent</b> |
|---|---|

## **4.4 Findings: IPO communication**

### **4.4.1 Primary findings: IPO communication**

#### **4.4.1.1 Top down mechanisms**

When the questions focused on the communication mechanisms, the consensus from the participants point to the communication at the IPO is primary “top down than bottom up ... messages come down most of the time” (Int 20). Responses also indicate that the IPO use a number of different methods and media to communicate to their staff, such as e-mails, intranet, Sharepoint, posters, video conferences and staff talks. However participants indicate that whilst the IPO Board believes that are communicating effectively, the IPO was not good at communication, and often communicated at the wrong time and to the wrong people, with comments such as:

“board likes to think it is communicating to the organisation and uses a variety of formal methods to do that” (Int 24)

“one of the things [the IPO] are not so good at, is getting the communications right, at the right time, at the right level” (Int 11)

“communication is always for some reason a difficulty ....it seems to be hard for us to get that right” (Int 16)

As a means to address communication problems, participants point to the recently created a new leadership team whose “role is to go back into their directorates and filter, feedback and cascade” (Int 17). However, despite this apparent effort that is being put in to communicate to all levels of the organisation, participants from the lower grades indicate that there were still issues regarding the clarity and frequency of information from senior managers.

#### **4.4.1.2 Objectives, strategy and vision**

When the questions focused on how the IPO communicate the objectives, strategy and vision of the IPO, the consensus from the participants indicate that they understood how their role fitted into the IPO objectives. Participants consider the IPO objectives as relating to the delivering of services which benefit society, support business and innovation, and benefit UK growth,



which are implemented through the Offices strategic goals. Participants state that the strategic goals or “three pillars”, relate to the delivery of rights, policy and services, which are under pinned by four corporate enabling goals, the internal process, relating to good value for money, governance, people issues, and environmental issues. As such, one participant indicates that the recently redrafted strategic goals or “three pillars” of the IPO would make it:

“hard for some not to find a pillar they fit in, including all support services” (Int 18)

#### **4.4.1.3 Volume of communication and communication tools**

When the questions focused on the volume of communication, and the tools used to communicate, participants indicate that they are often overwhelmed with information, to the point it is hard to find information that is relevant to them, with comments such as:

“classic civil service tactic of giving you all of the information all of the time, which means you don't care about any of it” (Int 14)

“the bit you wanted to know is a pin prick in the vast swathe of information .... you often get things in triplicate” (Int 24)

In addition, many managers indicate that they struggle to engage with the more junior staff, who they feel do not want to listen and engage, with comments such as:

“they have chosen to opt out of listening” (Int 3)

"a lot of people have a very narrow vision of the world, and it is generally the bubble that exists around their desk" (Int 8)

"it annoys me when people say you know, I did not know, you did not tell me, when you have told them and they did know, it is just that they did not listen" (Int 8)

In contrast, some of the lower graded participants comment that the messages received, were often not always clear or in a language that they could understand. In addition some participants also consider that their

managers either did not want to explain or simply did not have the time to explain the meaning behind the communications.

The questions also reveal that participants found it difficult to access information on the IPO's intranet and Sharepoint sites, with many responding that these difficulties restricted the sharing of information and knowledge across the IPO, with comments such as:

“people will find if they know it is there, but for anyone that might be interested it is impossible to find” (Int 14)

“ideally the intranet should be the up to date hub of all things going on the Office, and it isn't really, its outdated technical architecture means you cannot really support what I would see as a modern communications hub” (Int 3)

#### **4.4.1.4 Middle management / disconnect between senior management and lower grades**

When the questions probed into some of the problems in communication or where the process falls down, the consensus from junior staff indicate that there is a tendency for the information to stop, through what appeared to be a barrier that prevented information from filtering down, with comments such as:

“[information] gets to a certain level and everyone seems to know what is going on, and then there is this void below it” (Int 13)

In response to questioning to where the perceived blockages may lie, the general consensus from participants indicate that middle management as the blockage, and identify management's working loads as the potential barrier, with comments such as:

“probably middle management, I think the senior managers know what is going on, because they tend to have a lot of meetings” (Int 13)

“I think it is middle management ..... especially in my directorate where I am now, it is as if middle management haven't got time to talk to staff about staff issues” (Int 23)

However not all managers were considered as blocking communication, with some participants indicating that some managers were proactive in discussing

articles on the Intranet and explaining communication from senior managers. The responses indicate that this view was dependent upon your line manager, which was also a view that was evident when participants were asked whether they received information from their line managers, and whether their line managers listened to their views and opinions.

Participant's responses also indicate that primarily whilst managers are considered to be good operational managers, they are deemed to be poor people managers. In addition participants point to manager's styles and communication methods, in addition to the perceived lack of visibility of managers, differing across and within directorates. As such, participants indicate that policy directorate have managers that are visible, deemed to be more communicative, and listen to feedback, whilst the larger patent and trade mark and design larger directorates have pockets of blockages, which are seen as in light of managers having no time to spend with staff.

#### **4.4.1.5 The existence of silo's, and the informal network**

The responses from participants also highlight the IPO having a silo mentality across and within its directorates, which are seen as also blocking communication with comments such as:

"they don't socially engage with other directors or other directorates" (Int 3)

"[trademarks] don't appear to make quite as much effort in communication outside the directorate, as they do within" (Int 10)

The responses indicate that this is compounded by the IPO having few parts of the office spanning two or more directorates, and an apparent lack of commonality amongst directorates, with comments such as:

"there are very few parts of the business that sits across and tries to get an overall picture which the 'board is one of them'" (Int 14)

"very few cross department working groups" (Int 14)

"many people tucked away in little silos of their own directorate" (Int 3)

“you would not for example get many trade mark examiners speaking to patent examiners” (Int 19)

“we don’t share knowledge and information between directorates we are, we are really lacking something there. We are missing opportunities” (Int 11)

In contrast, participants point to the cross department working groups in the policy areas, as bucking this trend, with comments such as:

“there are good communications at working levels....certainly across the policy directorates, we do talk quite a lot” (Int 10)

“if you go into the wider area of business statistics then you do get cross fertilisation of information and ideas” (Int 19)

However, many participants point not only to formal channels as a means to receive communication, but that of the informal network; which also highlighted disparities between areas and directorates, and the perception that the Office is not always singing from the same hymn sheet, with comments such as:

“I think it depends how your informal links work” (Int 9)

“you get conflicting views and you are not quite sure which one to go with” (Int 9)

“we know something that they [the other directorate] don’t know” (Int 11)

“different parts of the Office will receive a message in a slightly different way” (Int 9)

The consensus from participants, point to the weaknesses of IPO communication, results in different parts of the office receiving different messages, which often results in duplication of work, or confusion to what the IPO are doing.

#### **4.4.1.6 Feedback**

When the questions focused on the feedback process at the IPO, the majority of the participants comment that the IPO managers did not use the consultation process with staff effectively. Participants indicate that they are

often consulted too late, leading to calls for honesty and clarity in the consolation process, with comments such as:

“we actually consult when we should not be consulting ... or we consult when actually we have already made the decision” (Int 11)

“so don’t ask people to give their comments and give that that thing of hope that, my voice might make a difference, when you already know what you are doing” (Int 11)

Participants of both lower and higher grades, also indicate that when it is appropriate for staff to be consulted and contribute to a decision, they were not always asked at the appropriate stage of the process, with comments such as:

“it depends upon where in the process my comments are asked for, because even at my grade we get asked at the wrong time” (Int 11)

In contrast, a number of participants, particularly those of lower grades, indicate that although managers are getting better at listening, they are selective to what they hear, and hence never fully understand their staff, with comments such as:

“[senior managers] have become better at listening [they were] not becom[ing] better at hearing” (Int 15)

“a persistent lack of understanding of what their staff think” (Int 15)

The responses also indicate that the effectiveness of feedback to managers across the IPO differed. Some participants indicate that their managers were receptive and encouraged feedback, particularly in the HR, Policy and Innovation directorates, who felt that their comments were listened to. This was in contrast to others in the operational areas of patents and trade marks (the areas the grant IP rights), who felt that their managers were not so responsive, who when questioned further indicate that this lack of responsiveness seemed to be related to managers having insufficient time to engage with their staff, in light of targets and workloads.

## **4.4.2 Secondary findings: IPO communication**

### **4.4.2.1 Top down mechanisms**

The secondary research point to the existence of a top down mechanism at the IPO in relation to both communication and the planning process, with comments such as:

“there is a lot of communication coming from Senior Management and the IPO board” (People Survey, 2011)

“[planning process] constructed in a highly top down manner” (Austin and Heath, 2010, p. 60)

### **4.4.2.2 Objectives, strategy and vision**

Whilst the Stanton Marris (2008), Gowers (2006) and Hargreaves (2011) reports all point to the importance of the IPO role of developing and maintaining the IP framework; where the IPO strategic drivers as being driven by government, business and international demands. The secondary data report a mixed response to whether staff members of the IPO are aware of the objectives and vision of the IPO. Although the People Survey (2011) reports that 80% of participants are aware of the IPO purpose, with 72% also agreeing that they had an understanding of the IPO objectives (table 4.3), Stanton Marris (2008) indicate that not all staff are aware of where the IPO is going, with comments such as:

“there are very many people here who see themselves as coal face workers.....who don't want to and aren't being made to buy into any new culture. They miss the message of where the new IPO is going” (Stanton Marris, 2008, p. 18)

### **4.4.2.3 Volume of communication and communication tools**

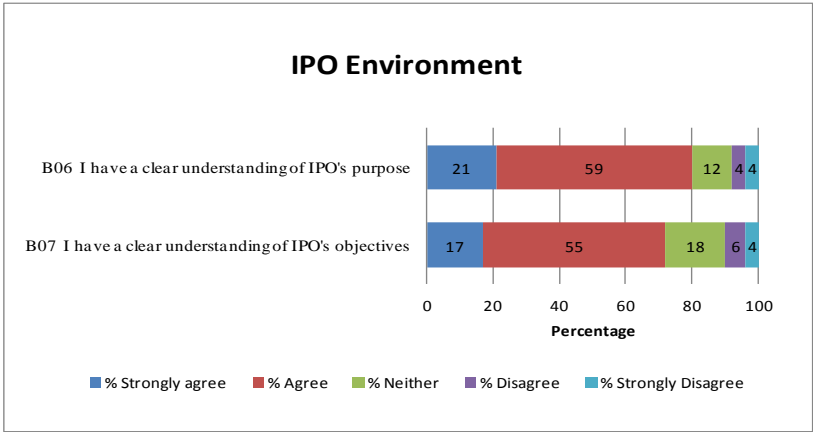
The secondary research report that although the IPO use a wide range of media to communicate to their staff, the responses to the People Survey (2011) indicate that the messages were not always received in a timely manner, with some participants indicating that they often did not receive communication, that communication was lost amongst the sheer volume of communications, or could not be found, with comments such as:

“updating the intranet would help with this if links to further information could be found” (People Survey, 2011)

“the intranet needs updating to allow staff to quickly and clearly find the information they require (People Survey, 2011)

“Sharepoint as a central store is good in theory, in practice documents can be hard to find.” (People Survey, 2011)

Table 4.3: Purpose and objectives of the IPO (source People Survey (2011))



The People Survey (2011) also report (table 4.4) that when staff members receive messages only 53% of participants felt that the IPO communicated on matters that affected them (B47). In addition, the survey highlights that some staff had difficulty in understanding the messages, in light of the language that is used, and reports calls for messages to be clear, and relevant to the target audience, with comments such as:

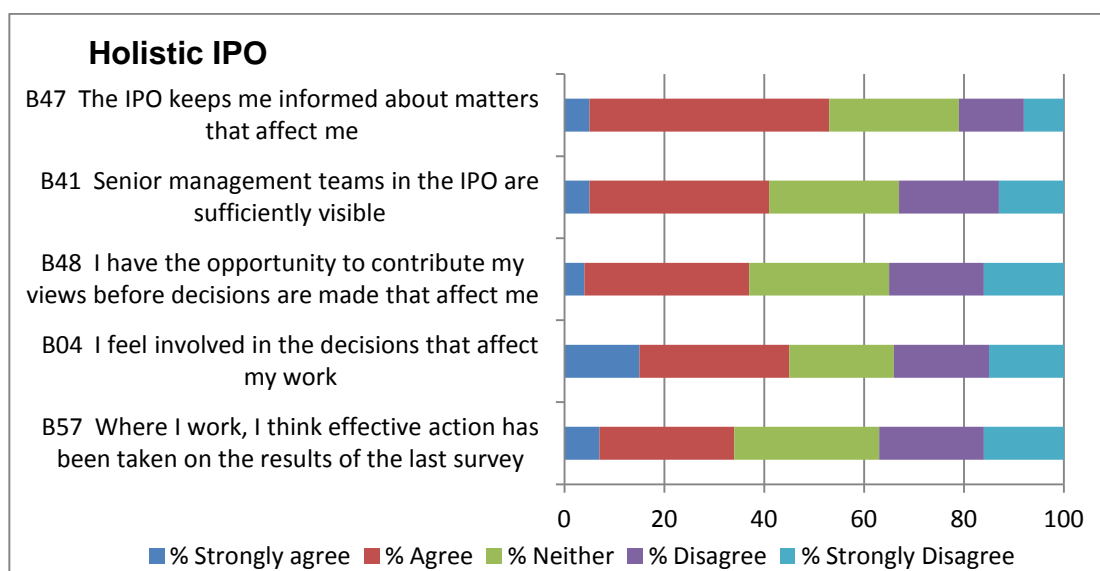
“messages should be easy to understand and not full of jargon and buzzwords” (People Survey, 2011)

“on many occasions it feels that information is being passed on without being re-drafted for the target audience” (People Survey, 2011)

The Stanton Marris (2008) report and People Survey (2011) also point to barriers with regard to the language and media used, and the inconsistency of the message within and across directorates, resulting in some staff feeling that they were not informed about matters that affected them, with comments such as:

“I have heard about forthcoming changes in my directorate from a colleague working in another area of the office” (People Survey, 2011)

Table 4.4: Communication (source People Survey (2011))



#### 4.4.2.4 Middle management / disconnect between senior management and lower grades

The Stanton Marris (2008) report a disconnect between the IPO board and the rest of the Office, and a perception that senior managers have a greater awareness of what is going on in comparison to the lower grades who appear to be scrabbling around for information, with comments such as:

“there is a sense of the leadership pursuing its own agenda while the rest of the Office continues the work it has always done” (Stanton Marris, 2008, p. 18)

“all sides, management and staff, should be singing from the same hymn sheet and working together” (People Survey, 2011)

As such, responses to the People Survey (2011) point to managers not assisting in the delivery of a clear and consistent message, with calls for:

“senior management [to] communicate down the chain via middle management and for middle management to convey all issues transparently” (People Survey, 2011)

“avoiding contradictory messages from managers” (People Survey, 2011)



“more consistency in the information received from senior management on the big issues like the Working beyond Walls project” (People Survey, 2011)

The secondary data, also point to a perceived lack of visibility of the senior management teams across some directorates, with calls for “senior management to be more visible” (People Survey, 2011), with only 41% (B41, table 4.4) of participants agreeing that “senior management teams in the IPO are sufficiently visible” (People Survey, 2011). This apparent disconnect between senior management and staff, is reflected in responses to the People Survey (2011) with comments such as:

“staff [are of the ] view that senior management don't value them or care about their views ... This view may not reflect the truth but perceptions are important and it's not a healthy position to be in” (People Survey, 2011)

“The IPO is very good at asking for [name] opinions about upcoming changes. Unfortunately these opinions are generally ignored which begs the question why bother asking for them in the first place?” (People Survey, 2011)

A relatively high proportion of staff questioned in the People Survey (2011), 35% (B48, table 4.4) report that they disagreed with the statement that ‘I have the opportunity to contribute my views before decisions are made that affect me’. A potential reflection of the secondary data’s view that IPO managers did not have the correct skill set to manage staff, with comments such as:

“we hear of very few examples of highly skilled, inspirational line managers” (Stanton Marris, 2008, p. 13)

“technical experts progressing [to managers] by virtue of their technical skills and viewing management skills as optional” (Stanton Marris, 2008, p. 13)

#### **4.4.2.5 The existence of silo’s and the informal network**

The secondary data highlight differences between directorates of the IPO, in which Stanton Marris (2008) indicate the existence of a ‘silo mentality’, and observed directorates as:

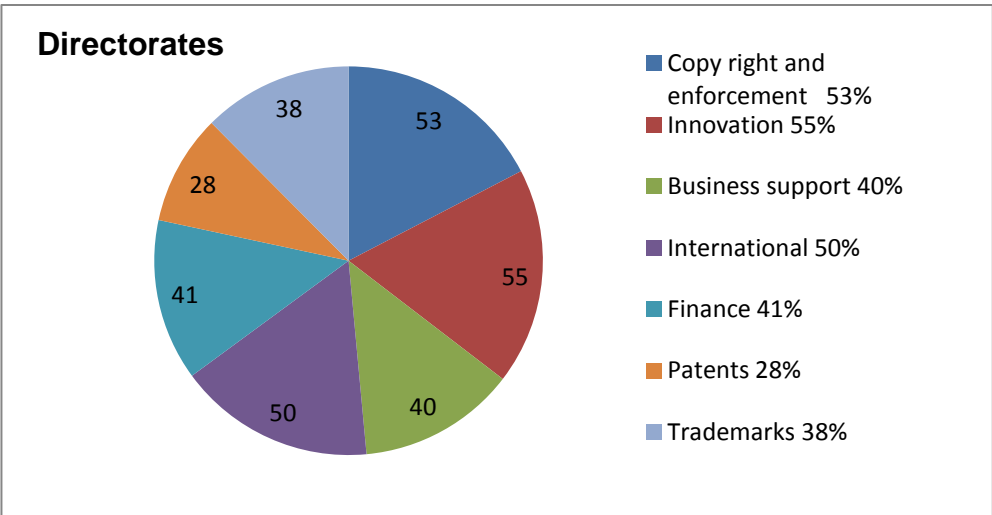
“distinct tribes with their ways of working and very little coordination or overlap” (Stanton Marris, 2008, p. 17)

As such the secondary data reports calls for “better communication across directorates” (People Survey, 2011), and a more consistent approach to communication, with comments such as:

“Fewer Directorates / Directors would probably help to give the place more of a unified personality and help to stop petty arguments about things that aren't important” (People Survey, 2011)

The People Survey (2011) also shows marked differences between the directorates in respect of staff having the opportunity to communicate their views regarding decisions that affect them (table 4.5), and how the staff felt involved in the decisions that affected their work (table 4.6). The People Survey (2011), indicate that the Patents and Trade Marks staff feel that they have less of an opportunity to contribute their views, than staff within the policy and innovation staff, with only a quarter of patent staff feeling that they are able to get involve in decisions that affect their work (table 4.6) compared to 64 – 67% of staff in policy and innovation areas.

Table 4.5: I have the opportunity to contribute my views before decisions are made that affect me (B48) (source People Survey (2011))



**4.4.2.6 Feedback**

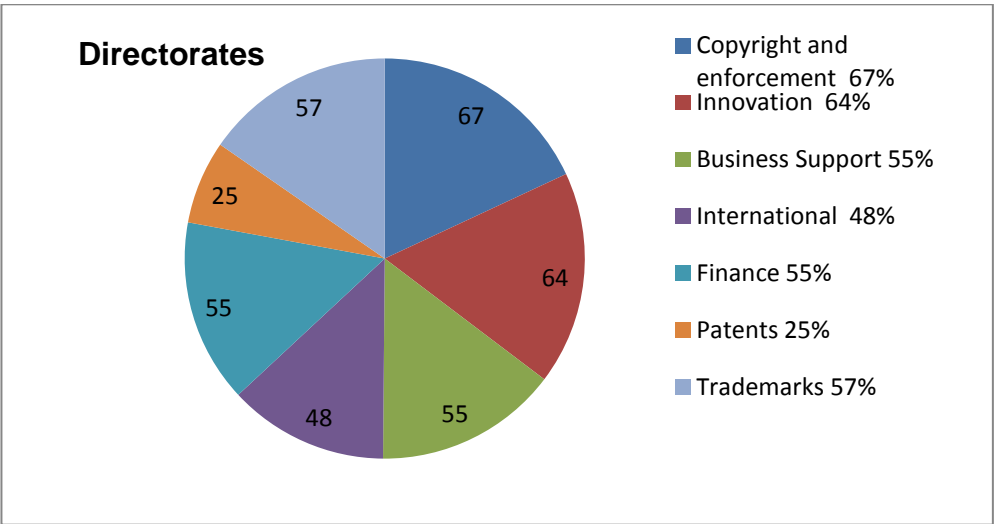
The secondary data questions the effectiveness of the IPO management to respond to staff feedback. 37% of participants of the People Survey (2011)

felt that no effective action was taken in response to the results of the last survey, with only 33% agreeing that effective action had been taken, as shown in table 4.4 (B57). This lack of effective action is associated with a lack of interest by management, with comments such as:

“if senior management had any real interest in making things better they would have looked back over the results of earlier survey’s and seen the same problems being raised time and again” (People Survey, 2011)

“there is an enormous difference between being heard and being listened to, and being consulted but not listened to is insulting, frustrating and pointless” (People Survey, 2011)

Table 4.6: I feel involved in the decisions that affect my work (B04) (source People Survey (2011))



Although the secondary data acknowledge that senior management consult staff as a whole, the People Survey (2011) report that the consultation process is often ineffective. It is common practice for management to over consult with staff, and when staff members are consulted feedback is not always listened too. In response, participants of the People Survey (2011) call for staff only to consult on issues that were deemed to be important to staff, and feedback when given, should be listened to and considered, as opposed to giving ‘lip service’ to feedback or not listening to it at all, with comments such as:

“management should learn to consult on the correct things. Many times I am consulted on something important to me but I am less confident that my views will actually be considered often I feel a decision has already been made” (People Survey, 2011)

“on other occasions I feel I am consulted on things I don't need to be consulted on” (People Survey, 2011)

“for management to realise that consultation means taking on board what we have to say, rather than completely ignoring our opinions and imposing their original proposals” (People Survey, 2011)

In contrast, although some participants of the People Survey (2011) indicate that management over consult, the People Survey (2011) also indicates that not all staff feel that are involved with decisions that affect their work (B04, table 4.4), or have an an opportunity to contribute their views, prior to decisions being made that affected them (B48, table 4.4). This view is prevalent in the operational areas of patents and trade marks, the IP right granting areas of the IPO, as opposed to the policy and innovation directorates.

### 4.4.3 Triangulation of the IPO communication findings

The positive and negative inferences between the primary and secondary data (Jack and Raturi, 2006, p. 351) are shown in table 4.7.

Table 4.7: Triangulation of the IPO communication findings

| COMMUNICATION   |        |   |
|---|--------|---|
| Top down and mechanism to communicate   |        |   |
| Primary Research  |        | Secondary Research  |
| <ul style="list-style-type: none"> <li>Primarily messages came down, through a variety of means such as meetings; intranet; e-mails; posters; video conferences; and staff talks.</li> <li>Creation of a new leadership team to communicate with directorates.</li> </ul> | n<br>+ | <ul style="list-style-type: none"> <li>There is a top down mechanism to communication within the IPO. <sup>[P,V]</sup></li> </ul>   |
| Objectives, strategy & vision of the IPO  |        |   |
| Primary Research  |        | Secondary Research  |
| <ul style="list-style-type: none"> <li>Staff are aware of the IPO objectives and new strategic values/pillars that allow staff to clearly identify where their role fits into the strategic</li> </ul>  | -      | <ul style="list-style-type: none"> <li>In the past staff missed the message of where the IPO was going. <sup>[S,P]</sup></li> </ul> |
|   | +      | <ul style="list-style-type: none"> <li>Indicates the importance of the IPO role of developing and maintaining</li> </ul>            |

|   |     |   |
|---|-----|---|
| process.  |     | <p>the IP framework for the benefit of UK plc.<sup>[S,G,H]</sup></p> <ul style="list-style-type: none"> <li>The IPO strategic drivers are the demands of BIS, wider government and international aspects of IP.<sup>[S,G,H]</sup></li> </ul>  |
| <b>Volume of communication and communication tools</b>  |     |   |
| <b>Primary Research</b>   |     | <b>Secondary Research</b>   |
| <ul style="list-style-type: none"> <li>The IPO does not always get the message out at the right time to the right people; and the message is not always considered clear in the sense that it is perceived that it lacks clarity.</li> </ul>  | +   | <ul style="list-style-type: none"> <li>A high proportion of staff pointed to the position that they have not been informed of matters that affected them.<sup>[S,P]</sup></li> <li>The timeliness of communications are not viewed as being effective.<sup>[P]</sup></li> </ul>         |
| <ul style="list-style-type: none"> <li>For some of the lower grades the language used in Office wide communications did not facilitate their understanding. This was compounded by their managers having insufficient time to explain the meaning behind the communications.</li> </ul>   | +   | <ul style="list-style-type: none"> <li>Barriers are associated in the language used in IPO communications, and instances of managers not explaining to staff communications such as the IPO objectives.<sup>[P,S]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>The intranet was not considered as an appropriate communication tool, it was considered outdated, and did not easily allow staff to identify relevant information.</li> <li>The loss of knowledge due to the poor formal communication channels such as the intranet, and across directorates</li> </ul>   | +   | <ul style="list-style-type: none"> <li>Staff cannot find things on the intranet, and called for it to be updated.<sup>[P]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>Staff are bombarded with information, often receiving 3 sources of communication on the same subject, which results in the information they require being lost in the vast swath of information received.</li> </ul>   | n/a |   |
| <ul style="list-style-type: none"> <li>Although the IPO has introduced SharePoint as a means to exchange information, concerns were raised regarding the inconsistent approach</li> </ul>   | n/a |   |
| <b>Middle managers / disconnect between senior management and lower grades</b>  |     |   |
| <b>Primary Research</b>   |     | <b>Secondary Research</b>   |
| <ul style="list-style-type: none"> <li>Managers are used to disseminate information and retrieve feedback; however it is perceived that communication in some areas is blocked by middle managers.</li> <li>The information received by staff is dependent upon your line manager, staff often heard of changes in their area from colleagues in other directorates.</li> <li>Communication is dependent upon your line manager to whether your feedback was listened to.</li> <li>The visibility of management varied</li> </ul> | +   | <ul style="list-style-type: none"> <li>Middle managers need to be more transparent with messages, and highlighted a disconnect between staff and senior management.<sup>[P,S]</sup></li> <li>The visibility of senior management differed across directorates.<sup>[P]</sup></li> </ul> |

|  |     |  |
|--|-----|--|
| across and within directorates.  |     |  |
| <ul style="list-style-type: none"> <li>Although managers are considered good operational managers, they are deemed to be poor people managers.</li> </ul>  | +   | <ul style="list-style-type: none"> <li>Predominately managers are progressed by virtue of their technical skill, and examples of inspirational managers with people management skills are viewed as being sparse.<sup>[S]</sup></li> </ul>   |
| <b>The existence of silos and the Informal network</b>   |     |  |
| <b>Primary Research</b>  |     | <b>Secondary Research</b>  |
| <ul style="list-style-type: none"> <li>Each silo (directorate) is described as having a distinct structure, a lack of commonality, which resulted in poor communication in relation to changes that affect other directorates.</li> </ul>  | +   | <ul style="list-style-type: none"> <li>There are sets of distinct tribes within the IPO that have little coordination or overlap.<sup>[S]</sup></li> <li>A lack of connectivity across management teams, committees and boards internally and with governance bodies externally.<sup>[S]</sup></li> <li>This disconnect in management bodies are viewed as matching disconnect in strategy and plans.<sup>[S]</sup></li> </ul> |
| <ul style="list-style-type: none"> <li>The common ground amongst directorates/silos is primarily at board level. Although efforts have been made to build bridges through cross functional project teams, the leadership team and the introduction of communication team.</li> </ul> | +   | <ul style="list-style-type: none"> <li>Identified a need for better communication across directorates, including a call for an integrated organisation with an emphasis on cross-working.<sup>[P]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>Not all managers and staff are singing from the same hymn sheet.</li> <li>These differences were highlighted by staff whose informal network included colleagues from a different directorate.</li> </ul>                                     | +   | <ul style="list-style-type: none"> <li>There is an inconsistency of messages within and across directorates.<sup>[S,P]</sup></li> </ul>  |
| <b>Feedback</b>  |     |  |
| <b>Primary Research</b>  |     | <b>Secondary Research</b>  |
| <ul style="list-style-type: none"> <li>Staff often felt that some consultations were box ticking exercises because the decision had already been made e.g. working beyond walls.</li> </ul>  | +   | <ul style="list-style-type: none"> <li>Staff only wanted to be consulted when they could affect the outcome.<sup>[P]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>Not all staff felt that they had the opportunity to contribute to a decision, often asked at the wrong time during the decision making process.</li> </ul>  | +   | <ul style="list-style-type: none"> <li>Not all staff felt that they were involved with decisions that affect their work.<sup>[P]</sup></li> <li>Staff in some directorates felt that their opinions were ignored.<sup>[P]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>Although managers were getting better at listening, they were not necessarily better at hearing. The perception is that management do not really care and do not want to hear bad news.</li> </ul>  | +   | <ul style="list-style-type: none"> <li>There is a difference between being listened to and being heard.<sup>[P]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>Some managers perceived the quality of feedback from junior staff as not being good, and having no weight.</li> </ul>   | n/a |  |

#### KEY TO TABLE

|   |   |
|---|---|
| <b>Primary research:</b><br>Semi-Structured Interviews<br><b>Secondary Research:</b><br>Archival documents:<br>G - Gowers (2006)- Provides a snap shot of the wider IP system in which the IPO sits<br>S - Stanton Marris (2008) - Assessment of the capability of the IPO to meet changes in the IP environment<br>V – Austin and Heath (2010) - Review of internal processes at the IPO<br>P - People Survey (2011)-Staff perceptions on key drivers of the IPO<br>H - Hargreaves (2011)- Provides a snap shot of the wider IP system in which the IPO sits | <b>+ = Convergence</b><br><br><b>- = Divergence</b><br><br><b>n/a = Neither convergent or divergent</b> |
|---|---|

## 4.5 Findings: IPO creativity, innovation and risk

### 4.5.1 Primary findings: IPO creativity, innovation and risk

#### 4.5.1.1 Rules, regulations, procedures and processes

When the questions focused on the ability of staff to be creative, participants view the bounded nature of the numerous acts and rules, and associated controls as limiting the capacity of staff to be creative, primarily for those in operational directorates such as patents and trade marks. This was endorsed by comments such as:

“regulations and the procedures which do not necessarily lend itself to creativity” (Int 11)

“creative changes can’t be anything that deviates from the law” (Int 3)

Participants also refer to management’s tendency to follow procedures and processes verbatim. Although one participant from a department within the operational patent directorate commented, that their team were empowered to be creative within the confines of the relevant legislation, and encouraged:

"not to be sticklers to procedures just for the sake of it ..... to come up with new solutions just based on their experience and their understanding of the flexibilities" (Int 16)

In contrast, the policy directorate view their roles as having a creativity and innovation element, particularly on matters that were within IPO control. Even where policy work of the Office were in some instances "bound[ed] by higher constraints than the IPO" (Int 10), participants from the policy directorates felt

that they could deviate from a set path within reasonable diplomatic boundaries. This is endorsed by comments such as:

“creativity is a function of policy work” (Int 24)

#### **4.5.1.2 Risk averse**

When participants were asked about the ability of the IPO to be creative, innovative and take risks, the responses indicate that the IPO’s demeanour is primarily bureaucratic and risk averse, with comments such as:

“I don’t think we are necessarily as creative as we could be or innovative as we could be; I am not sure we like people taking risks, so we tend to want to go the safe route most of the time” (Int 17)

When asked why the IPO was so risk averse, participants point to the risk averse nature of the IPO, being reflective of the rights granting work of the Office which is bound by acts and rules; and in light of the characteristics of the people who complete this work, such as patent examiners who represent a large proportion of the staff, in which:

“those that conduct detailed forensic work which are not necessarily the creative and imaginative types” (Int 11)

Participant’s comments also point to the reluctance of managers to allow staff to skip a procedure or process, or the combining of processes, in light of the consequential reputational risk to the IPO, albeit that the participants viewed such risk as being very small. Senior management were also seen as showing reluctance to empower staff, with comments, with comments such as:

“the tiers of checking in an iterative process” (Int 18)

“there is a lot of reporting on what I suppose to do and what I have done and some of that detracts from actually being able to do it .... produc[ing] papers for tiers of management and feedback is sometimes overbearing” (Int 18)



#### **4.5.1.3 Workload and targets**

When the questions focused on the barriers to creativity, participants indicate that the primary barriers to creativity surround the excessive workload and numerous targets, particularly within the operational directorates of patents and trade marks. Participants point to the target mentality preventing staff attending training and development courses, and preventing managers from having the time to manage and develop their staff. This lack of time is seen by a few participants, as being compounded by staff shortages; primarily in the patents and trade mark directorates, in light of an increase in demand. As a result many of the participants conclude that in their area workloads and staffing levels, are out of balance, to the point that they felt that the quality of their work has decreased. This is endorsed by comments such as:

“work colleagues and I are frustrated under the workload pressure” (Int 15)

“the recent increase in workloads and constant pressure of targets, are affecting the quality of my work” (Int 12)

#### **4.5.1.4 Agile and flexible workforce**

When the questions focused on the agility of the IPO to respond to changes in the environment, many of the participants point to the IPO having a highly skilled workforce with a collective knowledge of an IP system that has changed very little over the past 40 years, with comments such as:

“we are experts in the field” (Int 18)

“we have good knowledge of IP issues” (Int 9)

Participants also report that the IPO has a very low turnover of staff, although turnover was noted to be different dependent upon roles within the Office, with comments such as:

“some of the patent examiners literally sat at the same desk for 30 years, whilst policy staff have a tendency to mover every two –three years or so” (Int 10)

Participants also indicate that turnover at senior management level was higher than those of lower grades, which was perceived to have resulted in a “sort of stagnation” (Int 8) at lower grades. When questioned to what contributed to this low turnover of staff, the majority of participants point to staff being reluctant to change; with comments such as:

“if you have been around an organisation for so long you get comfortable in it, you don’t really want to adapt and change” (Int 5)

“routines that you have accepted and you work to that, may be harder to change” (Int 14)

“So you know, the flip side of our strength and stability is a bit of stagnation, and if the wind of change comes, then we would struggle I think to adapt to that” (Int 5)

When questioned to why IPO staff struggle to be adaptable and flexible, participants indicate that whilst the IPO managers are considered generally good operational managers, they are often poor people managers. As a result, empowerment of staff varies across the office, in which managers have a tendency to delegate no more than a list of tasks, and in some instance micro manage their staff. This is endorsed by comments such as:

“different levels of empowerment within the organisation” (Int 13)

“some managers are control freaks and micro manage staff” (Int 13)

When questioned to whether the IPO encourages creativity and innovation, participants view the IPO as generally supporting creativity and innovation. However, participants view the nature of the operational roles as “not necessarily the creative and imaginative types” (Int 11). There is also a perception that some areas of the office, in particular the operational patent and trade mark areas, struggle to accept people with a creative flair, and as such those with creative flair tend to gather in areas of like-minded staff, such as Innovation and Policy. This is endorsed by comments such as:

“if we find people that have got creativity we actually treat them as being a bit scary and a bit odd and we don’t like them much” (Int 11)

“they tend to be described as a bit of a “maverick” ... seen as a bit off the wall” (Int 11)

“[creative staff either] conform with the majority or move to areas of the Office that contain the likeminded creative staff” (Int 5)

As such, one participant refers IPO primarily as a:

‘machine with smatterings of creativity, with a tendency for one size fits all, where everyone must use the system and there must be no deviation from that’ (Int 17)

As a result, a number of participants of senior grades, question whether there is sufficient flexible and adaptable staff with a creativity tendency to overcome a crisis, with comments such as:

“[do we have] enough people in the organisation to handle that level of uncertainty, level of change, can they handle ambiguity, have we got those people, are we making the best use of them” (Int 24)

“the inherent difficulties of a ‘spoon fed’ culture of [the operational areas of] the Office, and the difficulties in asking staff in those areas to then be more flexible and think out of the box when required” (Int 17)

In contrast, some of the participants questioned, indicate that they are allowed to be creative and are empowered to make decisions within their role, and that their teams were encouraged to do so. These participants represent the IPO’s HR, Policy and Innovation directorate, and are endorsed with comments such as:

“we are encouraged to think outside of the box, to come up with creative solutions in order to deliver new services” (Int 17)

“in order to raise IP awareness we need to be creative and will experiment with new methods and media for delivering IP information to customers and user’s of IP” (Int 18)

Participants also call for staff to be allowed greater freedom, to allow them be creative and “work slightly differently” (Int 17), and for managers to be encouraged to delegate and empower their staff, as a means for the Office to be more flexible and agile.

#### 4.5.1.5 The creation of new ideas

When the questions probed participants to how the IPO facilitated the creation of new ideas, the responses point to the IPO's formal channel for presenting new ideas, namely the Staff Suggestion Scheme. Although they point to the scheme as being popular and heavily used, it was felt that when new ideas were put forward, they were often met with resistance and defensiveness from the managers where the suggestions could be applied; with comments such as

"staff suggestion scheme there are some real star suggestions, that are recognised and rewarded .... I think a lot of people are disillusioned about the responses they get" (Int 20)

Participants also indicate that not all managers were willing to support, and develop their staff, and the IPO in general were "not very good at pulling in ideas and engaging staff at appropriate points and having coherent involvement" (Int 15). This was also reflected in comments regarding projects initiated by the Office to resolve identified problems. Participants indicate that the membership of the project teams did not appear to be diverse, and never appear to fulfil their objectives and finish, with comments such as:

"it is the same people all the time" (Int 8)

"you see the same people involved" (Int 23)

"we have had numerous project teams over the years tasked with improving communication, they all fall to the side for one reason or another" (Int 11)

Consequently participants indicate that for many talented people within the IPO, the promoting of any new ideas or ways of working owe much to their own perseverance. However, participants did report a recent improvement with the introduction of lean methodology across the Office, which was welcomed in light of the methodologies approach of empowering job holders to review processes in their area and for the participants of lean to suggest and implement changes, which were previously made by managers or departments remote to the process.

“we have recently been ‘leaned’, I was wary to begin with, but I enjoyed the process of being allowed to lean the processes concerning my job” (Int 21)

## **4.5.2 Secondary findings: IPO creativity, innovation and risk**

### **4.5.2.1 Rules, regulations, procedures and processes**

The secondary data did not provide any direct comments indicating that the rules, regulations, procedures and processes of the IPO were detrimental to or facilitated the ability of staff to be innovative and creative. However the People Survey (2011) did indicate that the bureaucratic, command and control nature of the IPO, in particular those surrounding rules and objectives suppress staff, with comments such as:

“encourage innovation rather than stifle staff with rules” (People Survey, 2011)

“suggestions are often not implemented as a rigid structure of working enables managers to feel more comfortable that their objective will be met” (People survey, 2011)

### **4.5.2.2 Risk averse**

The secondary data considers that the IPO is primarily risk averse, this is supported by Stanton Marris, (2008, p. 18) who reported that 78% of staff questioned felt that the IPO discourages people from taking reasonable risks. The secondary data also indicate that the risk adverse nature of the IPO was a reflection of the IPO board, who desire to eliminate risk where ever possible in order to maintain the reputation of the Office (Stanton Marris, 2008, p. 21; People Survey, 2011). Stanton Marris (2008, p. 21) viewed this meticulous, risk averse nature, as a result of the ‘copper bottom’ approach of the patent examiners way of working which is bound by rules and regulations, having spread throughout the Office, slowing the Office down.

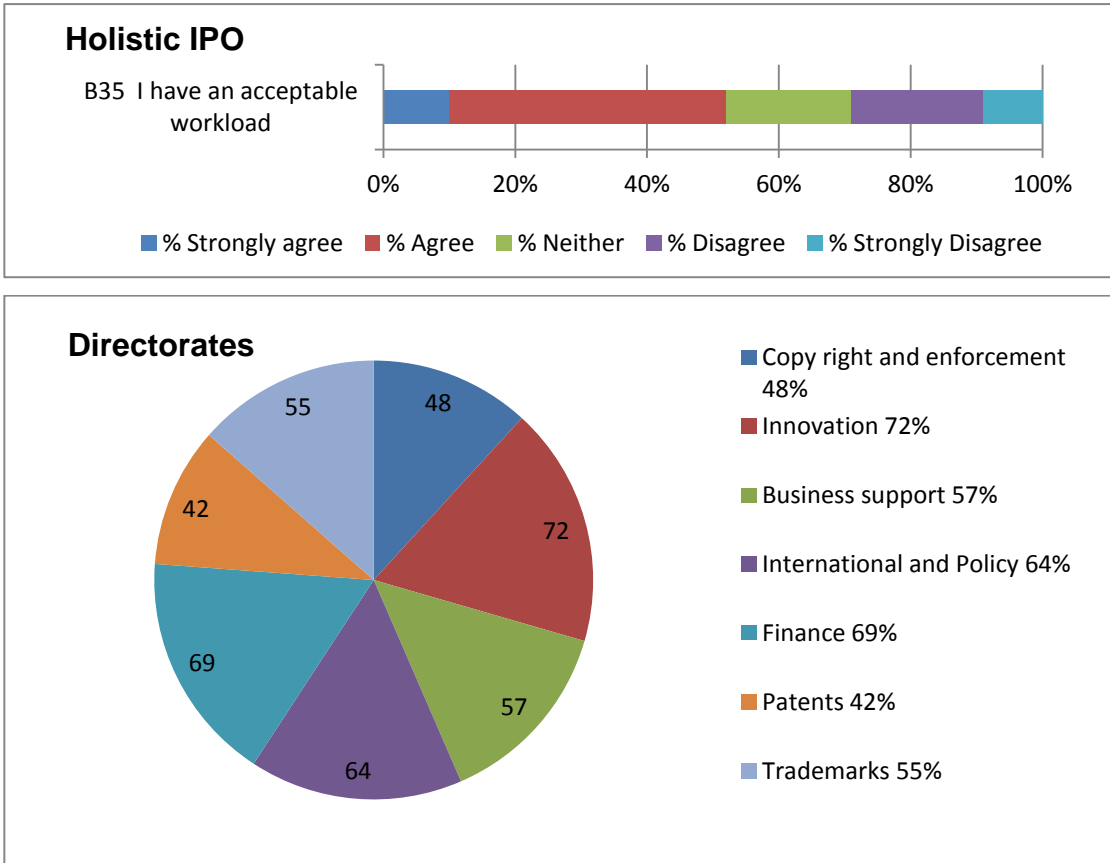
### **4.5.2.3 Workload and targets**

The secondary data indicate that workloads and targets are affected the ability of the IPO staff to be creative and innovative, with comments such as:

“many people seem to be exhausted by increasing workloads. We tend to take on new activities, without dropping any old ones. This leaves no time or mental energy for innovation” (People Survey, 2011)

The People Survey (2011) also reports that staff had felt that their high workloads were preventing them from attending training courses, with just over half of those questioned (52%) agreeing with the statement that ‘I have an acceptable workload’, as shown in table 4.8. The People Survey (2011) also indicates a disparity across the directorates, in which it is noticeable that the Patent, Trademark and Copyright and Enforcement directorates were less positive with 42% and 48% respectively, in comparison to Innovation and Policy (72 and 64% respectively).

Table 4.8: Workload pressures: I have an acceptable workload (B35) (source People Survey 2011))



#### 4.5.2.4 Agile and flexible workforce

The secondary data questioned the ability of the IPO to be creative in response to changes in the IP environment. In order to address this matter the secondary data called for the IPO to introduce more ‘creative’ types to address the matter; and to fully utilise and appreciated its diverse staff with a

“broader capacity or skill set” (Stanton Marris, 2008, p. 11). This was in contrast to the perceived treatment of staff, in which Stanton Marris (2208) comments that:

“where staff are recruited who do have the potential to develop a more strategic approach, or who bring a different range of experience or skills from the norm, the perception is that this is “drilled out” of them” (Stanton Marris, 2008, p. 11)

The secondary data also point to the IPO’s low turnover of staff, which restricts the Offices ability to recruit this creative mindset. Although it was noted that this restriction was primary in relation to the lower grades, since the secondary data point to the recruitment at senior grades being primarily filled by external candidates. The reports also indicate that the ability of staff to have autonomy or freedom is dependent upon the staff member’s manager and directorate. This is endorsed by the People Survey (2011) who report that in response to the statement ‘I have a choice in deciding how I do my work’ (table 4.9), holistically 66% indicate a positive response. However, this is in contrast to directorates that are associated with rules and regulations, such as Patents (57%), who are seen as less favourable to this view. Stanton Marris (2008) also indicate that the technical / expert manager, associated with the operational areas, as being one that was unwilling to delegate and collaborate. A contrast to alternative areas of the IPO office that comment:

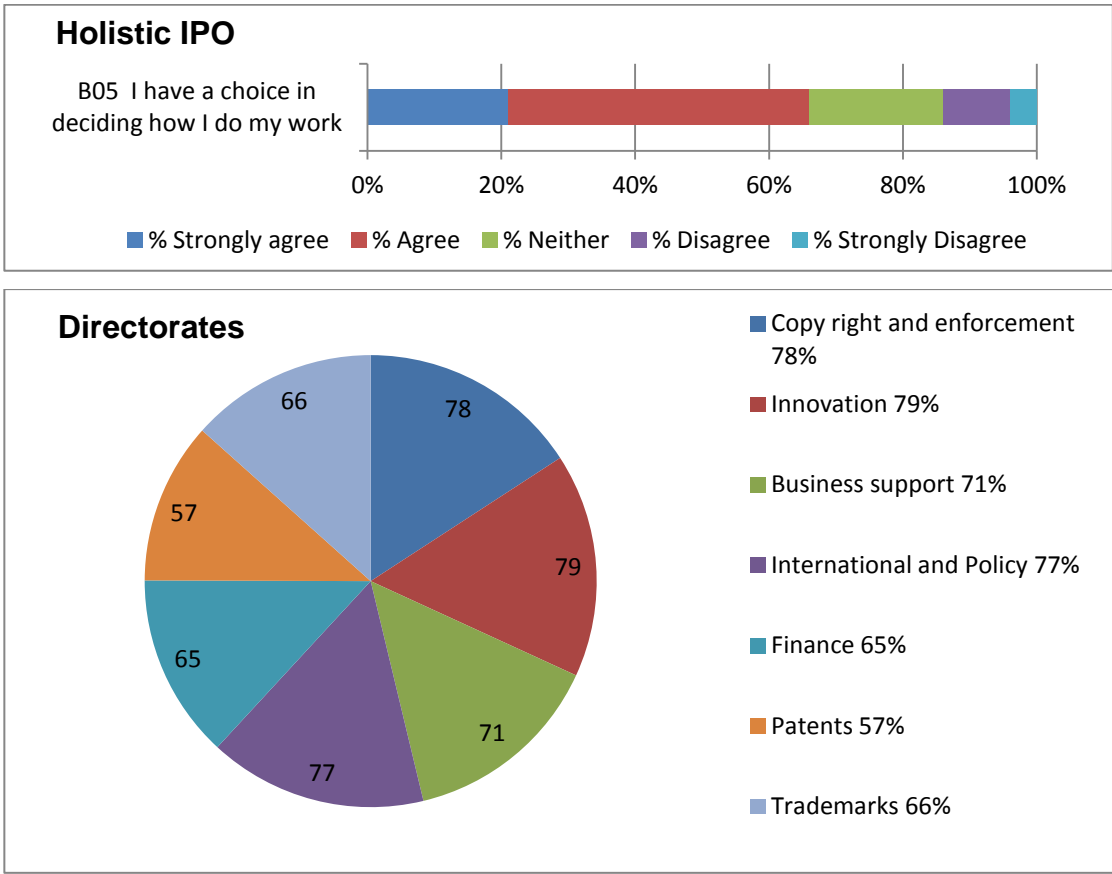
“my manager encourages me to make decisions particularly on minor problems” (People Survey, 2011)

#### **4.5.2.5 The creation of new ideas**

The secondary data questions the ability of the IPO to be creative, even though it is considered to be the home of innovation, with comments such as:

“given [that the IPO’s] role in encouraging the UK economy to be innovative, the internal mechanisms to support the generation of truly innovative ideas within the Office is unclear” (Austin and Heath, 2011, p. 77)

Table 4.9: Autonomy: I have a choice in deciding how I do my work (B05)  
(source People Survey (2011))



Austin and Heath (2010) indicate that although creative and innovative approaches can be found at the IPO, it seems to occur in spite of the Office, rather than with its encouragement. This is endorsed with comments, such as:

“some examples of innovative working can be found within the Office” (Austin and Heath, 2010, p. 77)

“usually [being] driven by keen individuals with much perseverance” (Austin and Heath, 2010, p. 77)

The People Survey (2011) concur with Austin and Heath (2010), and comment that holistically 61% (table 4.10) of participants felt that their team were ‘encouraged’ to come up with new and better ways of doing things; with the operational directorate of trade marks (59%) and patents (45%), having



markedly lower percentages in comparison to the other directorates. Within this framework of the encouragement of creativity holistically 76% (table 4.11) indicate a positive response to the statement ‘My manager is open to ideas’. However it was noticeable that the operational areas of trademarks and patents were less positive with 71% and 69% respectively; and that on a wider scale the Survey reports a perceived lack of involvement and engagement with staff, who felt they were often consulted at the wrong time, or not consulted at all. This is endorsed by the Stanton Marris (2008) report, who encouraged the managers of the IPO to increase their engagement with the lower grades to develop new ways of working.

Table 4.10: The people in my team are encouraged to come up with new and better ways of doing things (B21) (source People Survey (2011))

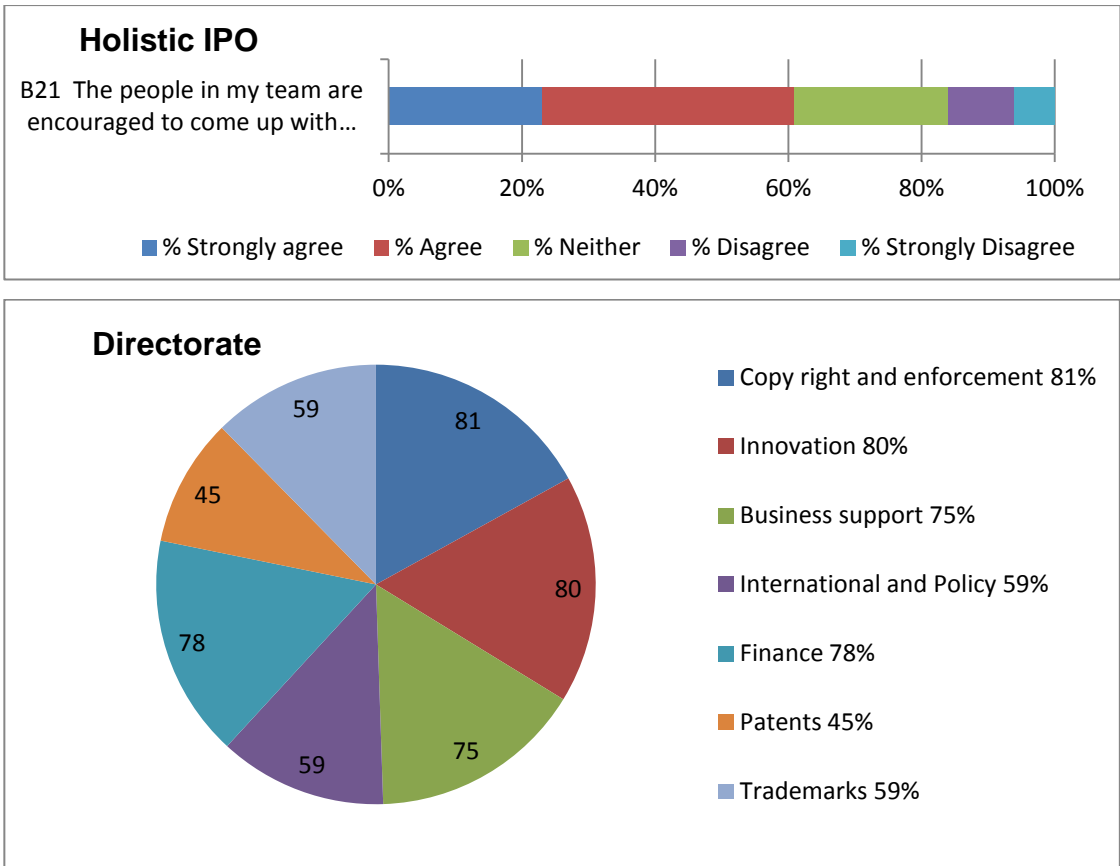
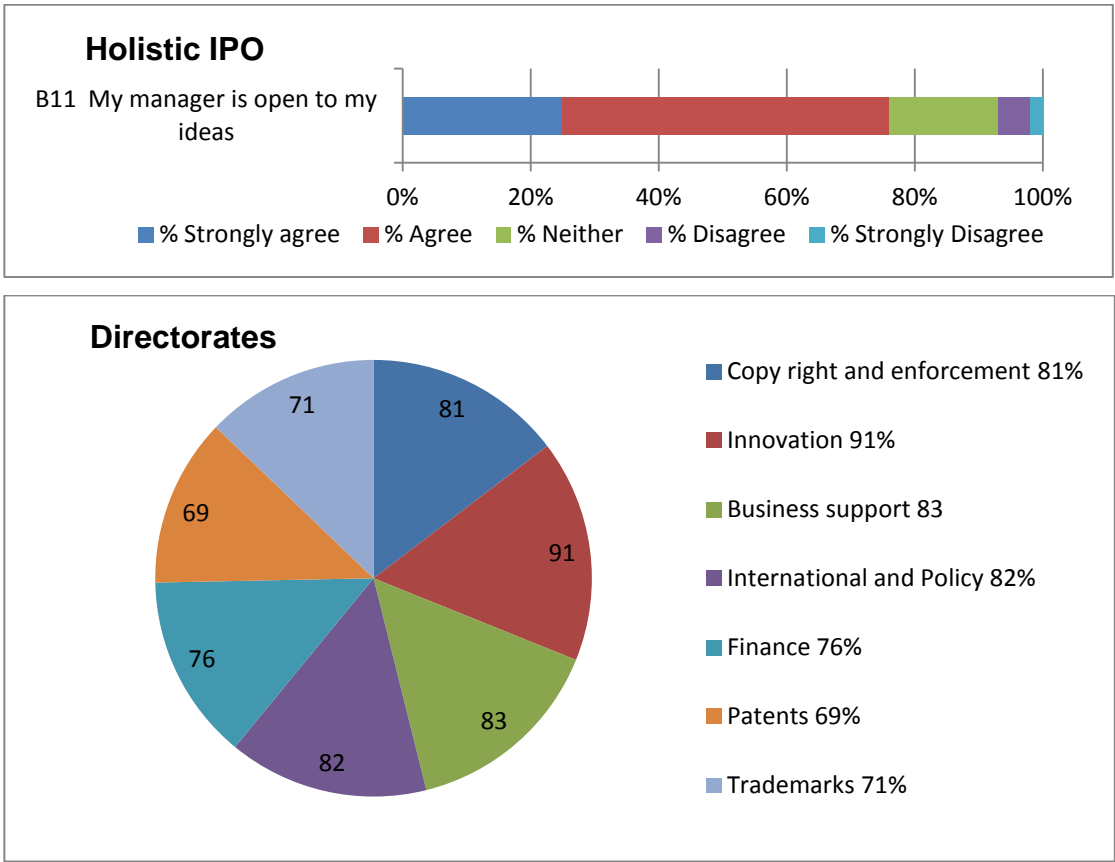


Table 4.11: My manager is open to my ideas (B11) (source People Survey (2011))



The People Survey (2011) also indicate that participants want the IPO to be more forthcoming with taking risks as a means to learn, with comments such as:

“be brave and try something that is really new and creative” (People survey, 2011)

“embrace challenges and take a punt at things” (People survey, 2011)

However, the People Survey (2010) indicate that the target culture of the IPO appears to be dampening the staff’s ability to be creative and innovative, and indicates that managers are more concerned about hitting targets to meet their objectives that encouraging staff to be creative (People survey, 2011). As such the People Survey (2011) indicates that the IPO are failing to use the diverse backgrounds of staff that joined the IPO from other organisations’, and

hence miss out on capturing new experiences, perspectives and approaches, all of which could provide more innovative approaches to the way IPO works.

### 4.5.3 Triangulation of the IPO creativity, innovation and risk findings

The positive and negative inferences between the primary and secondary data (Jack and Raturi, 2006, p. 351) are shown in table 4.12.

Table 4.12: Triangulation of the IPO creativity, innovation and risk findings

| CREATIVITY, INNOVATION AND RISK   |     |   |
|---|-----|---|
| Rules, regulations, procedures and processes  |     |   |
| Primary Research  |     | Secondary Research  |
| <ul style="list-style-type: none"> <li>The numerous acts and rules within which the organisation is bound, has the capacity to limit the creativity of its staff.</li> </ul>  | +   | <ul style="list-style-type: none"> <li>Rules and manager objectives are stifling staff's ability to be creative and innovative.<sup>[P]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>The bureaucracy of procedures and processes, which have imposed control through numerous levels of hierarchical management</li> </ul>  | n/a |   |
| <ul style="list-style-type: none"> <li>Staff within certain areas of the IPO, such as policy, have the capacity to be creative within limited boundaries, and in this respect they are empowered to do so.</li> </ul>                                       | n/a |   |
| Risk averse   |     |   |
| Primary Research  |     | Secondary Research  |
| <ul style="list-style-type: none"> <li>The risk averse nature of the IPO is primarily associated with the senior management team, and their stance to reputational risk.</li> </ul>   | +   | <ul style="list-style-type: none"> <li>IPO Board considered as being risk averse.<sup>[S]</sup></li> <li>The forensic nature of some aspects lends itself to being risk averse.<sup>[S]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>The risk averse nature of the IPO was considered reflective of numerous acts and rules within which the organisation is bound.</li> </ul>  | n/a |   |
| Workloads & targets   |     |   |
| Primary Research  |     | Secondary Research  |
| <ul style="list-style-type: none"> <li>Workloads and targets within the IPO are restricting the ability of staff to attend training courses and development opportunities, and the availability of time for managers to engage with their staff.</li> </ul> | +   | <ul style="list-style-type: none"> <li>Only half of the staff felt that workloads are acceptable.<sup>[P]</sup></li> <li>Workloads and targets were limiting access to training and development and restricting creativity and innovation.<sup>[P]</sup></li> </ul> |
| <ul style="list-style-type: none"> <li>The imbalance between resources and workloads, with the suggestion that</li> </ul>   | n/a |   |

|  |     |  |
|--|-----|--|
| there is not enough resources in some areas.   |     |  |
| <b>Agile and flexible workforce</b>  |     |  |
| <b>Primary Research</b>  |     | <b>Secondary Research</b>  |
| <ul style="list-style-type: none"> <li>Managers questioning whether there is sufficient flexible and adaptable staff with a creative tendency, to overcome a crisis.</li> </ul>  | +   | <ul style="list-style-type: none"> <li>Highlighted a need for the capability of the IPO to reflect the changes in the IP environment, and questioned the experience and vision of the staff to meet this capability.<sup>[S]</sup></li> <li>The IPO to introduce more “creative types” of people.<sup>[S]</sup></li> </ul> |
| <ul style="list-style-type: none"> <li>The research indicates that in some areas if you do not follow the norm of the group you either have to conform or move on. In this respect creative and imaginative people are considered as mavericks.</li> </ul> | +   | <ul style="list-style-type: none"> <li>The IPO does not fully utilise and/or appreciate its diverse staff. The historical research indicates that new recruits have stated that they were recruited because they were different but often have to conform to the majority mindset.<sup>[S]</sup></li> </ul>                |
| <ul style="list-style-type: none"> <li>Dependent upon the line manager and directorate, staff may be empowered.</li> </ul>   | +   | <ul style="list-style-type: none"> <li>Some managers encouraged staff to make decisions on minor problems.<sup>[P]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>Some managers micro manage and delegation is no more than a list of tasks.</li> </ul>   | +   | <ul style="list-style-type: none"> <li>The technical / expert manager is viewed as being unwilling to delegate and collaborate.<sup>[S]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>The IPO has a very low turnover of staff, with a large number of staff that have not worked in any other organisation.</li> </ul>   | +   | <ul style="list-style-type: none"> <li>The IPO has a low turnover of staff.<sup>[S]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>Turnover was higher in the policy areas, which was attributed to the ability of policy staff to be proficient within a year, and the tendency for policy staff to move every 3 years.</li> </ul>                    | +   | <ul style="list-style-type: none"> <li>Vacancies at senior level were primarily filled by external candidates.<sup>[S]</sup></li> </ul>  |
| <b>The creation of new ideas</b>   |     |  |
| <b>Primary Research</b>  |     | <b>Secondary Research</b>  |
| <ul style="list-style-type: none"> <li>The formal channel for new ideas is through the staff suggestion scheme. Although heavily used, the perception of staff is that they were disillusioned with the responses they received.</li> </ul>                | +   | <ul style="list-style-type: none"> <li>Staff calling for the IPO to be innovative and creative.<sup>[P]</sup></li> <li>Staff considered as improving services and coming up with creative solutions without encouragement.<sup>[V]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>New suggestions were often met with resistance and defensiveness of the managers where the suggestion would be applied.</li> </ul>  | n/a |  |
| <ul style="list-style-type: none"> <li>Need to involve all staff in projects not just the same people.</li> </ul>  | +   | <ul style="list-style-type: none"> <li>Management to engage with junior grades and to develop new ways of working.<sup>[S]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>The IPO are not always very good at pulling in ideas and engaging staff at the appropriate time.</li> </ul>   | +   | <ul style="list-style-type: none"> <li>There is a lack of encouragement, support and development of talent and creativity.<sup>[P]</sup></li> </ul>  |

#### KEY TO TABLE

|   |   |
|---|---|
| <b>Primary research:</b><br>Semi-Structured Interviews<br><b>Secondary Research:</b><br>Archival documents:<br>G - Gowers (2006)- Provides a snap shot of the wider IP system in which the IPO sits<br>S - Stanton Marris (2008) - Assessment of the capability of the IPO to meet changes in the IP environment<br>V – Austin and Heath (2010) - Review of internal processes at the IPO<br>P - People Survey (2011)-Staff perceptions on key drivers of the IPO<br>H - Hargreaves (2011)- Provides a snap shot of the wider IP system in which the IPO sits | <b>+ = Convergence</b><br><br><b>- = Divergence</b><br><br><b>n/a = Neither convergent or divergent</b> |
|---|---|

## 4.6 Findings: IPO culture

### 4.6.1 Primary findings: IPO culture

#### 4.6.1.1 Supportive family culture

When the questions focused on the culture, participants describe the IPO as “a nice place to work” (Int 14), which consist of people who are generally recruited early in their working lives’ and supportive of one another. This view is endorsed with comments such as:

“a small circle of people who are recruited early in their working lives” (Int 25)

“supportive and where everyone knows one another” (Int 8)

“Quasi family” (Int 25)

#### 4.6.1.2 Change culture

When the questions focused on the type of culture is present participants indicate that the IPO has a change culture in light of the ongoing change programs that are being undertaken on numerous projects with comments such as:

“We have undergone extensive change programs” (Int 20)

“We are open to change” (Int 24)

However participants question whether the amount of change is really necessary and link many of the change programs undertaken at the IPO, with

either the appointment of a “new CEO every four years, or directors” (Int 2), which results in a new change program with comments such as:

“a lot of change for change sake” (Int 20)

“change fatigue as a result of yet another change program introduced by the new CEO” (Int 7)

Participants also indicate that some of the problems they associate with the change programs of the past is that there would be a big launch, only to see the change program either not achieve anything, or the change program carry on for so long that people forgot what the change is about, with comments such as:

“speciality in the past has been the big launch, big fanfare” (Int 3)

“only to see the propensity of change either fizzle out, or to spend far too long in the trough of the change curve” (Int 20)

In this respect participants also indicate that in the past, poor leadership and too much consultation were given as reasons for the failure, in addition to the implementation of new change programs, prior to the completion of the previous program, where participants acknowledge that the IPO had not finished implementing the recommendations from the Gower’s Review of IP (2006), prior to the initiation and completion of the Hargreaves Review of IP (2011). Participants also indicate that the failure was also attributed to the inability of the IPO to embed the change, in which participants point to the change as either not involving them or something that it is happening to someone else.

However in order to address these issues and past failures, participants indicate that recently in order to break away from the change programs following the same path, with the same people, the IPO has recently introduced “more formal project management” (Int 16) and processes and procedures through the appointment of business change managers, where change is now viewed as:

“something that we need to manage and is constantly ongoing” (Int 20)

As a result participants describe the role of the ‘change managers’ as a:

“network of people whose entire role is to get the improve program from start to finish” (Int 3)

in which participants indicate that the change managers are now within each of the directorates, as a means to improve both the communication and involvement with the change program, with comments such as:

“embedded in each directorate and provide what [the change program] means to you” (Int 16)

“actively tries to encourage everybody to get involved” (Int 24)

The participants also point to the introduction of lean methodology, as a means of current job holders of streamlining working practices and procedures, which is having the impact of increasing the buy in and participation through the active involvement in the process. In this respect the participants also report the impetus of senior management, to ensure the ‘Improve’ program does not lose any of the momentum, unlike previous change programs by learning from past mistakes with comments such as:

“which is one of the reasons why the directors are very keen to genuinely carry it through by not taking too long to make decisions” (Int 10)

#### **4.6.1.3 Different ways of working across the organisation**

When the questions focused on how the different directorates work across the IPO, participants indicate that there are some specific cultural peculiarities, between and within the directorates of the IPO. Participants point to two distinct cultures of the academic patent examiner and the support staff generalist, who are viewed as having:

“two quite different mindsets and different ways of working and approaches to life” (Int 16)

Participants indicate that whilst these differences are generally viewed as a positive influence for the IPO, they are also viewed as a source of tension with comments such as:

“when you need people to contribute in different ways” (Int 10)

“on many occasions a source of tension “(Int 16)

Many of the participants point to these sub cultures as having limited commonality, and working as “machine [with] wheels within wheels” (Int 18), limiting the ability of the Office ability to be flexible and organic, with only pockets of flexibility within the IPO, which participants indicate is a consequence of the statutory rules and regulations. Participants also point to the different cultures associated with different directorates, resulting in inconsistencies to how staff are treated, with regard to the information that they receive and how they are managed, which is perceived to be reflective of the style of the director of the directorate.

#### **4.6.1.4 Ability to learn**

When the questions focused on the IPO’s ability to learn participants indicate that there are pockets across the Office where staff are allowed to make mistakes as part of the learning process, so long as the mistakes are not repeated. In addition participants also indicate that senior management are also learning from past mistakes, in that unlike previous change programs, there was a perception that senior managers were actively ensuring that the ‘Improve’ program did not lose momentum to ensure the benefits are realised, with comments such as:

“[The board] were quite aware of the fact that they wanted to keep up momentum that you can't take too long to make your decisions and decide what you are going to do and that kind of thing, that they ... overcoming criticisms of previous change that lost momentum” (Int 10)

“we let them drift and [the CEO] is keen for that not to happen this time” (Int 10)



So on the face of it participants indicate that the IPO are “actually learning from the mistakes that we have made in the past” (Int 5).

In this respect, participants acknowledge that:

“one of the reasons the IPO have moved to more formal project management is to try to identify better whether the benefits have been achieved as a result of what we set out to achieve” (Int 16)

However, a number of participants indicate that the ability of the IPO to learn was reliant on the “the length of [its] institutional memory” (Int 25), and having staff that in positions long enough to remember what went wrong, and the dependence on the honesty of staff to admit when things went wrong, with comments such as:

“Corporate memory you do need people to be here a while to remember that this did not go wrong or this did not go right” (Int 9)

“lessons are kind of lost because even when you document lessons learnt there isn't one place where people can go back and think well we did a project not to dissimilar to this what were the lessons learnt” (Int 18)

As a means to provide a corporate memory, participants point to the recent introduction of SharePoint, and its use as a “collective memory” for the IPO (Int 18). In this respect participants indicate that it was perceived that the IPO did “not [have] a culture of learning” (Int 14).

In addition, a number of participants also indicate that they did not necessarily feel valued or motivated by their managers, which some attributed to the after effects of the staff surplus exercise in 2009 with comments such as:

“changed the way some people felt about the organisation” (Int 8)

Participants also indicate that they are exasperated by the majority of managers having poor people skills, and the existence of a blame and risk averse culture in some areas of the Office.

## **4.6.2 Secondary findings: IPO culture**

### **4.6.2.1 Supportive family culture**

The general consensus from the secondary data is that the IPO is viewed as having a nice friendly atmosphere with comments such as:

“The IPO is a friendly place to work, with many people who are will to support and help you” (People Survey, 2011)

“A great family where everyone knows each other” (People Survey, 2011)

### **4.6.2.2 Change culture**

The People Survey (2011) indicates the IPO as being an organisation in a state of constant change, with comments such as:

“[the IPO has a ] culture of making changes before we have to”, in which “we seem to be continually in a state of flux and I don’t feel we ever complete the implementation stage before moving to some other initiative” (People Survey, 2011)

Whilst the IPO has a ‘change culture’, Austin and Heath (2010) indicates that the IPO was far from having a culture that recognises the need to change to meet changes in the external environment.

However whilst the People Survey (2011) recognise that the IPO are constantly in a state of change, the survey (table 4.13) indicates that 50% of staff disagreed with the statement that change is managed well (B45); and 46% also disagreed with the statement that when changes are made in the IPO, they are usually for the better (B45). Consequently The People Survey (2011) indicates that whilst some change programs are applauded, more often and not the change program is not effective with comments such as:

“I applaud some of the initiatives that have been undertaken, because at least we can see "something" happening But more often than not ... what you end up with is a mess” (People Survey, 2011)

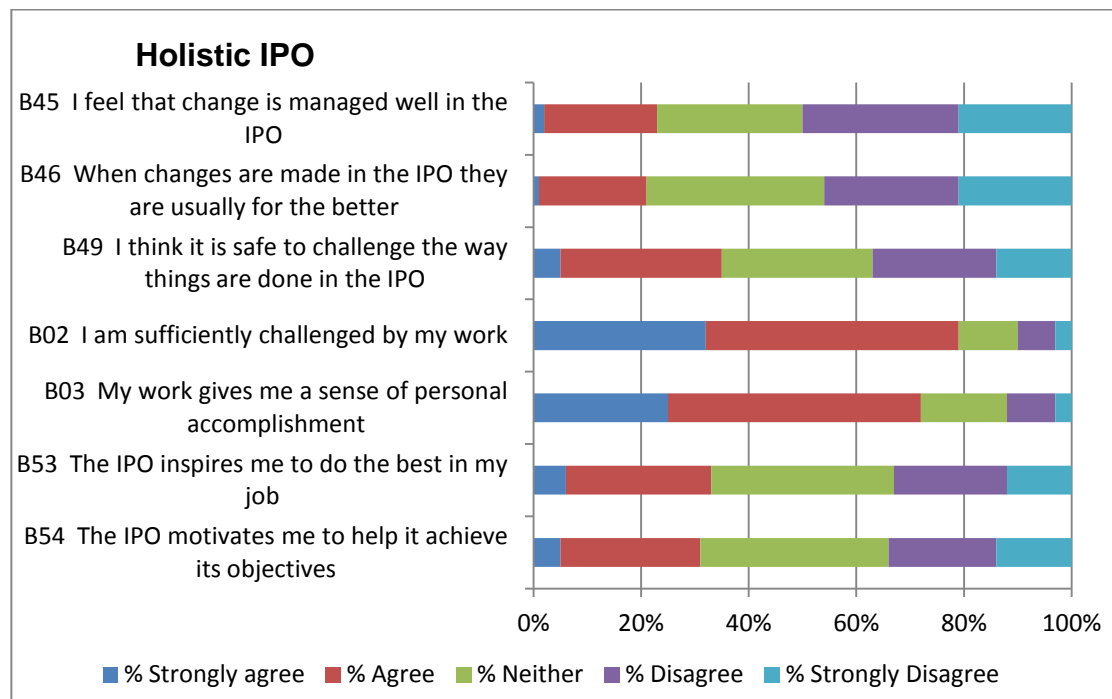
In this respect the People Survey (2011) acknowledge that whilst the framework for change has improved through the implementation of formal project management processes and procedures, it was generally considered

that there were too many change programs (often initiated with the appointment of a new CEO), with no prioritisation, which were overcomplicated, with too many people involved (Austin and Heath, 2010). As such, Stanton Marris (2008) points to the IPO needing to prioritise projects and outcomes, and to overcome the vast array of initiatives and process improvement projects with comments such as:

“lack of focus on outcomes across many of the initiatives and process improvements in place [around the Office]” (Stanton Marris, 2008, p. 25)

“to allow initiatives to gain real traction” (Stanton Marris, 2008, p. 33)

Table 4.13: Motivation and change at the IPO (source People Survey (2011))



#### 4.6.2.3 Different ways of working across the organisation

The Stanton Marris (2008, p. 17) report view the directorates within the IPO as “distinct tribes” with distinct cultures and ways of working and very little coordination or overlap. This view was also concurred by Austin and Heath (2010, p. 115), which reflect the directorates of the IPO, as a set of separate operating units each led by its own director and senior management team, which results in what is reported as a fragmented view of common issues, and

hence finds it difficult to capitalise on synergies across the Office. In addition, Austin and Heath (2010, p. 72) indicate a need for a consistent approach across the IPO, and a reduction in the number of directorates in an attempt to unify and capitalise on synergies. Consequently these perceived differences in the ways of working and cultural differences between the senior management and general staff with comments such as:

“it really feels as though the senior management are here to look good to those above them and really don’t care about those below them” (People Survey, 2011)

The People Survey (2011) also indicates that the perceived ‘blame culture’, in which managers shirk responsibility for their decisions; together with a ‘target culture’; is having the effect of restricting the ability of staff to develop, and managers to manage, with comments such as:

“an ever-widening gulf appears to be developing between those that do the work and the senior levels of management” (People Survey, 2011)

These comments are also concurred by the People Survey (2011), in which only 35% agreed with the statement that it was safe to challenge the way things are done as shown in table 4.13 (B49), with comments such as:

“if you speak up you are immediately accused of not being corporate” and “being labelled negative whenever I ask questions about how things will work in practice” (People Survey, 2011)

The People Survey (2011) also indicates a need for consistent management values across the Office, in order to eradicate what the survey describes as the different ways that staff are treated across the IPO with comments such as:

“differen[t] ways that Directorates and groups of staff are treated when comparing one with another.” (People Survey, 2011), and a “consistency of practice across the organisation would ensure fairness for all” (People Survey, 2011)

However, Austin and Heath (2010, p. 128) indicate that there is a lack of resources and mechanisms in place to identify and address inconsistencies in management approach.

#### **4.6.2.4 Ability to learn**

The secondary data pointed to IPO managers as having primarily poor people manager skills, which is compounded by a 'blame culture' within the IPO, where managers were considered as not taking responsibility for their actions with comments such as:

“put the blame squarely upon their staff when problems arise, due to their own inability to plan ahead and organise and an unwillingness for some to take responsibility for their actions; resulting in a loss of respect with senior management” (People Survey, 2011)

In addition the People Survey (2011) (table 4.13) indicates that although staff found their work interesting, with 79% indicating that they are sufficiently challenged (B02); and 72% indicating that their work gives a sense of personal accomplishment (B03); only 33% indicate, that the IPO inspire them to do their best in their job (B53); and only 31% indicate that the IPO motivates them to achieve the overall objectives of the Office (B54). This was endorsed by comments such as:

“I feel less valued, motivated and engaged now that at any other point in my career” (People Survey, 2011)

Austin and Heath (2010) also indicate that the IPO is not considered to be good at learning, since only 33% of staff indicate that they felt that effective action had been taken in light of the previous People Survey (B57) as shown in table 4.4. This inability to reflect and learn on past actions was also reflected in the Hargreaves Review (2011), and contradicts the IPO learning and development strategy where:

“learning is valued at every level and encouraged as a continuous process” (Austin and Heath, 2010, p. 75)

In this respect the People Survey (2011) indicates that the numerous targets restrict the ability of staff and managers to engage and learn. In addition the risk averse nature is seen as restricting the Offices ability to learn, with the People Survey (2011) reporting calls for the managers to move away from being ‘yes managers’ to managers that encompass debate with comments such as:

“learn to take calculated risk and fail gracefully if required [and] appreciate the effort of staff” and a means to “learn to embed change in an organisation” (People Survey, 2011)

In this respect calls were made to encourage the promotion of staff with good management skills, and to encourage good management behaviour across the Office, so that consistent management support is relevant to all, with comments such as:

“as always my immediate line management continue to be excellent, supportive and providing a great team atmosphere to work within” (People Survey, 2011)

### 4.6.3 Triangulation of the IPO culture findings

The positive and negative inferences between the primary and secondary data (Jack and Raturi, 2006, p. 351) are shown in table 4.14.

Table 4.14: Triangulation of the IPO culture findings

| CULTURE   |   |  |
|---|---|--|
| Supportive family culture   |   |  |
| Primary Research  |   | Secondary Research   |
| <ul style="list-style-type: none"> <li>IPO has a family and supportive culture, in which people have been with the Office generally a long time.</li> </ul>                         | + | <ul style="list-style-type: none"> <li>IPO staff viewed the Office as having a nice friendly atmosphere.<sup>[P]</sup></li> </ul>  |
| Change culture  |   |  |
| Primary Research  |   | Secondary Research   |
| <ul style="list-style-type: none"> <li>The quantity of change and change programs have left staff feeling that change is for change sake.</li> </ul>                                | + | <ul style="list-style-type: none"> <li>The IPO appears to implement changes before they have to.<sup>[P]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>The IPO does not do change well; and staff view change as primarily either not involving them or it is happening to someone else.</li> </ul> | + | <ul style="list-style-type: none"> <li>The IPO is far from having a culture that recognises a need to change to meet changes in the external environment.<sup>[V]</sup></li> </ul> |

|   |         |   |
|---|---------|---|
| <ul style="list-style-type: none"> <li>The change process follows the same route with more often than not the same people.</li> </ul>   | n/a     |   |
| <ul style="list-style-type: none"> <li>The IPO is open to change, however there is a tendency not to see it through, and spend far too long in the trough of change.</li> <li>Poor leadership and too much consultation are considered as reasons to why change fails.</li> </ul> | +       | <ul style="list-style-type: none"> <li>Whilst some change programs were applauded, generally change was considered as generally over complicated, with too many people involved.<sup>[P,V]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>There was failure to implement old changes prior to introducing new ones such as Gower's and Hargreaves Reviews.</li> </ul>  | +       | <ul style="list-style-type: none"> <li>The IPO never seem to complete the implementation stage of change before moving on to some other initiative.<sup>[P]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>The introduction of a new CEO or director every 4 years, brings automatically a new change program, resulting in 'change fatigue'</li> </ul>   | +       | <ul style="list-style-type: none"> <li>The cycle of change, resultant of the cyclical change of CEO, had left some staff exhausted.<sup>[P,V]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>The IPO have introduced formal project management procedures, to improve the process and delivery of change.</li> </ul>  | +<br>/- | <ul style="list-style-type: none"> <li>Whilst the framework for change has improved, it is still considered that there is still too much change with no prioritisation.<sup>[P,V]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>Staff questioned the level of engagement that the Improve program achieved with the rest of the organisation, and therefore the buy in to change.</li> </ul>   | +       | <ul style="list-style-type: none"> <li>It would appear difficult for the IPO to engage all staff in Office wide initiatives and change programmes.<sup>[P,V]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>The IPO are using lean methodology to streamline procedures and processes.</li> </ul>  | n/a     |   |
| <b>Different Ways of Working across the Organisation</b>  |         |   |
| <b>Primary Research</b>   |         | <b>Secondary Research</b>   |
| <ul style="list-style-type: none"> <li>The existence of a silo mentality such as operational v policy, TMD v Finance, TMD v Patents, Academic v generalist and patent examiner v administration.</li> </ul>   | +       | <ul style="list-style-type: none"> <li>Calls for a consistent approach across the IPO, and reduction in the number of directorates to help unify and capitalise on synergies.<sup>[V]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>The IPO has a set of distinct cultures, mindsets and ways of working, with a limited commonality.</li> </ul>   | +       | <ul style="list-style-type: none"> <li>The IPO consists of distinct cultures and ways working.<sup>[S]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>Staff are not treated consistently across the IPO.</li> </ul>  | +       | <ul style="list-style-type: none"> <li>Calls for consistent management values across the Office.<sup>[P]</sup></li> <li>There were a lack of resources and mechanism to identify and address inconsistencies in management ability and approach.<sup>[V]</sup></li> </ul> |
| <b>Ability to Learn</b>   |         |   |
| <b>Primary Research</b>   |         | <b>Secondary Research</b>   |
| <ul style="list-style-type: none"> <li>The IPO's corporate memory was not necessarily enhanced due to 4 year cycle of senior management.</li> </ul>   | +       | <ul style="list-style-type: none"> <li>The IPO did not appear to have a mechanism to ensure that it could reflect on past decisions as a stimulus for learning.<sup>[V,H]</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>Some areas of the IPO consider that mistakes are part of the learning process, as long as they are not repeated.</li> </ul>  | +<br>/- | <ul style="list-style-type: none"> <li>Calls for the IPO to learn and implement change.<sup>[P]</sup></li> </ul>  |

|   |     |  |
|---|-----|--|
| <ul style="list-style-type: none"> <li>• Management to value staff for doing their job.</li> <li>• Some IPO managers encourage and give room to staff to develop, and see it as their duty to develop staff for the future.</li> <li>• Many managers were considered good operational managers, but deemed poor people managers.</li> </ul> | +/- | <ul style="list-style-type: none"> <li>• Calls to encourage a culture that values staff.<sup>[P]</sup></li> <li>• Staff are being promoted not necessarily because they were the best people for the job, leading to poor people managers.<sup>[P]</sup></li> <li>• Some managers considered to be 'yes' managers who do not want decisions to be challenged through debate.<sup>[P]</sup></li> <li>• Recognition of good managers.<sup>[P]</sup></li> </ul> |
| <ul style="list-style-type: none"> <li>• Morale and trust fell with the CEO of 2008-2010, in light of the surplus exercise.</li> </ul>  | +   | <ul style="list-style-type: none"> <li>• Research indicates that staff had found it harder to motivate themselves, and found little motivation from the IPO objectives.<sup>[P]</sup></li> <li>• A reported loss of respect with senior management.<sup>[P]</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>• In some areas of the IPO a blame culture exists</li> </ul>   | +   | <ul style="list-style-type: none"> <li>• A blame culture exists, where blame is shifted to others, and unwillingness for some to take responsibility for their actions.<sup>[P]</sup></li> </ul>   |

#### KEY TO TABLE

|   |   |
|---|---|
| <b>Primary research:</b><br>Semi-Structured Interviews<br><b>Secondary Research:</b><br>Archival documents:<br>G - Gowers (2006)- Provides a snap shot of the wider IP system in which the IPO sits<br>S - Stanton Marris (2008) - Assessment of the capability of the IPO to meet changes in the IP environment<br>V – Austin and Heath (2010) - Review of internal processes at the IPO<br>P - People Survey (2011)-Staff perceptions on key drivers of the IPO<br>H - Hargreaves (2011)- Provides a snap shot of the wider IP system in which the IPO sits | + = <b>Convergence</b><br><br>- = <b>Divergence</b><br><br>n/a = <b>Neither convergent or divergent</b> |
|---|---|

## 4.7 Summary discussion of findings tables

This section will now provide a summary discussion of the findings tables found in sections 4.2.3, 4.3.3, 4.4.3, 4.5.3, and 4.6.3 respectively. In respect of the data theme of the IPO environment (Table 4.1), the primary and secondary data reflected the view that the IPO predominately view their environment as certain. However the differences between the primary and secondary findings would appear to indicate that the IPO are making efforts to be more outward looking, and seeking to identify customer needs and new services as a means to formulate and develop collaborative policy. In terms of the decision making (Table 4.2), the findings predominately indicate predictability and stability of the environment are the main drivers of planned



demand which culminate in the delivery of the corporate plan. However the differences between the primary and secondary findings indicate that whilst secondary sources have called for the planning process to follow a bottom up approach, the primary findings indicate that the planning process follows a top down process, which has moved from a bottom up approach of the past. The findings also indicate that there are perceptive differences regarding the Trading Fund status of the IPO, and the impact that this Accounting status has on the capacity / restrictions to respond to changes. With respect to the IPO communication findings (Table 4.7), both sources of findings indicate that there is a top down mechanism to communication. However the differences between the primary and secondary sources indicate that staff feel part of the IPO objectives, and the new strategic values/pillars, which permit the staff to clearly identify, where their role fits into the overall strategic process. This is in contrast to the past, in which the staff missed the message of where the IPO was going. With respect to the IPO creativity, innovation and risk findings (Table 4.12), both sources of findings indicate that the numerous Acts and rules and regulations within which the IPO is bound have the capacity to limit and stifle creativity of the staff. Furthermore both sets of data indicate that the risk averse nature of the IPO, is predominately as a result of the senior management team / IPO Board and their stance to reputational risk. With respect to the IPO Culture findings (Table 4.14), both sources of findings indicate that the IPO is far from having a culture that recognizes the need for change to respond to changes in the environment. Moreover the findings indicate that the quantity of change and numerous change programs have left staff feeling that changes have been made for change sake.

## **4.8 Chapter summary**

This chapter presents the findings from the primary and secondary data sources. For each of the data themes the major results are summarised and highlight the positive and negative inferences between the two sources of data. The significant findings from the research show that the IPO predominately view the environment as certain and slow to change, in which the planning process largely revolves around a diverse range of targets,

based on the predictable and past behaviour of customers. This behaviour was also concurred by the view that there was little effort, put into developing scenario plans, or competing business plans, which may be adapted or dismissed over time. A key finding shows that the IPO is predominately controlled in a top down manner, in which both the decisions taken and the bureaucratic manner in which decisions are arrived at, is broadly driven in a top down fashion, in which control and management sponsorship is religiously required at all levels of the management chain. In this respect, a key finding that would appear to be hindering the ability of the IPO to change and adapt, is through the tensions that exist, between what is perceived as either overloading the organisation with duplicate information, or information that is not readily accessible through an outdated communications hub. Further communication barriers also exist, as a result of the silo structure and perceived stagnant middle management, which is preventing the organisations' ability, to communicate diagonally and elliptically which results in mixed messages, and the perception that the IPO is not operating as one system. The findings are particularly of interest in the context of the IPO, which is regarded as the organisation that facilitates, and stimulates creativity and innovation of the UK economy, since the formal mechanisms and rules and regulations that are in place, do not easily facilitate the IPO to maximise, and benefit from the creative ideas of all members, which would appear to handicap the organisation, from learning from past mistakes or different perspectives. The next chapter will discuss the findings in relation to the review of the literature provided in chapter two, and thereby meet the aim and objectives of this study.

## 5.0 Discussion

### 5.1 Introduction

This chapter will discuss the findings in relation to the review of the literature, provided in chapter two of this study. To explore the behaviours of the IPO, the established findings data themes and their relationships with the CAS behaviours will be analysed with the aid of the complexity strategy matrix which was established from the literature.

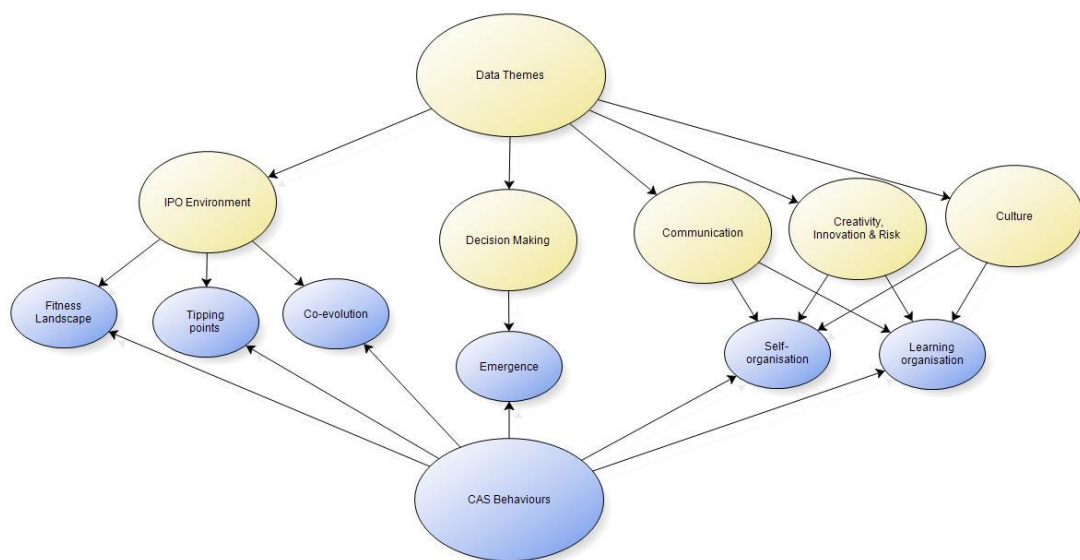


Figure 5.1: Relationships between data themes and CAS behaviours

Figure 5.1 pictorially presents the relationships, between the five preselected data themes from the findings chapter, and the corresponding CAS behaviours, which have been established from the literature review. Therefore, as with the findings, the structure of this chapter will be divided into five key data themes, which will culminate in the discussion of the holistic behaviour of the IPO, through the CAS paradigm, and thereby meet the aim and objectives for the study. The chapter concludes with a summary of the key discussions, which will be taken forward to chapter 6, the conclusion of this study.

## **5.2 The IPO and the complexity strategy matrix**

To explore the IPO behaviours using the complexity strategy matrix which was established in the literature review (section 2.7.4), there is a need in the first instance to establish the overarching position of the IPO on the matrix. This position will be established as a result of the findings from the previous chapter, which will allow the overarching behaviours of the IPO to be considered in each quadrant of the matrix, and allow the evaluation of identified IPO behaviours that deviate from the overarching behaviours of the IPO.

The consensus from the findings of this study, indicate that the IPO primarily view their environment as ordered and stable, with the scope for large and sudden change considered to be small, due to the considered certainty surrounding the slow changing institutional IP framework. Whilst it was acknowledged that the IP environment had changed and will change in the future; these changes were considered to be what the findings indicate as an acceptable tolerance, and as such the findings indicate this will not require any change to their current strategy (Int 8, 11, 14, 16, 17, 20, 23, 24). The IPO may therefore be considered as being positioned at point 'X' on the complexity strategy matrix (figure 5.2), where the IPO's overarching knowledge of the market place is regarded as known, and where the IPO primarily consider the degree of instability in its environment is to be relatively predictable, or what may be considered as a state of bounded instability (Stacey, 1992, 1993).

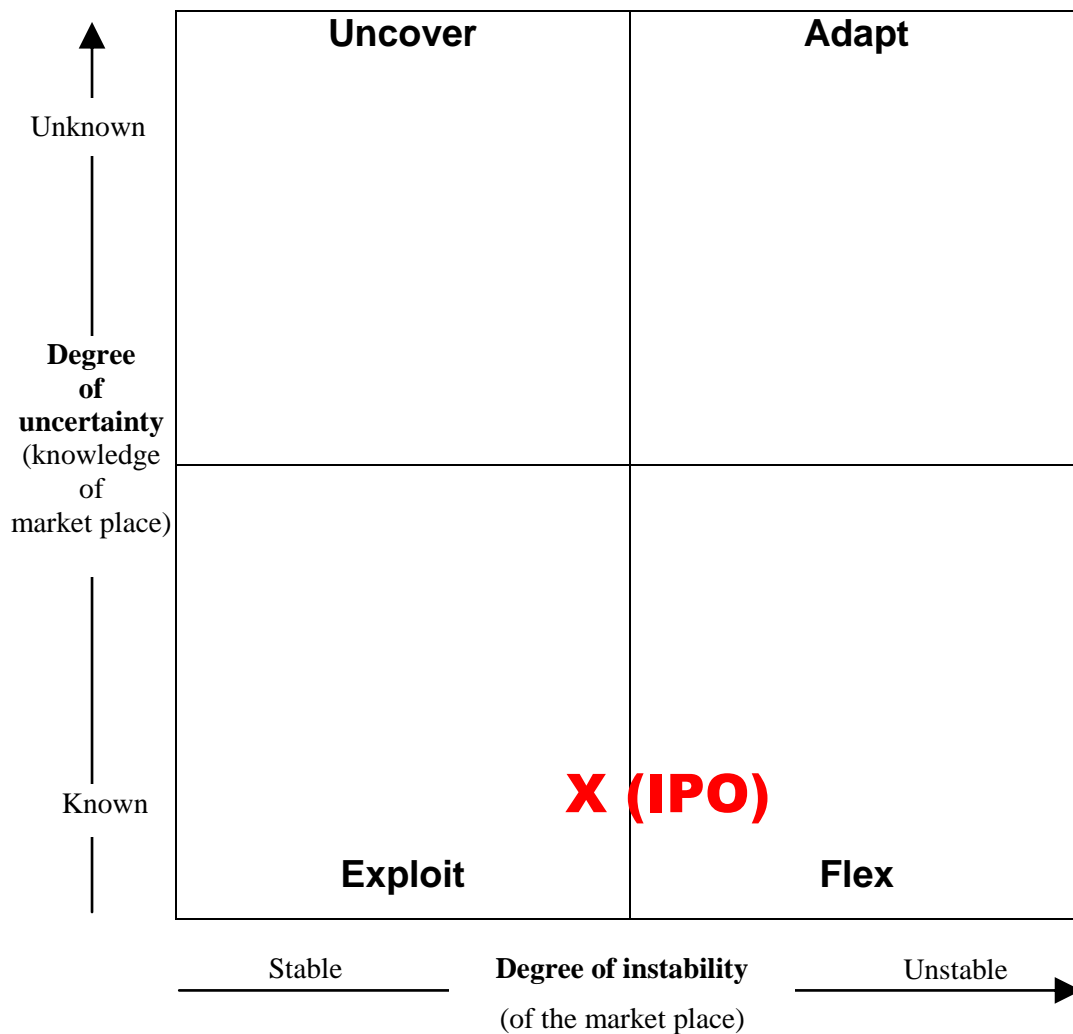


Figure 5.2: The IPO and complexity strategy matrix (source Boulton and Allen (2004, p. 10))

The relationship of the five data themes and corresponding CAS behaviours will now be evaluated, facilitated by the complexity strategy matrix, to establish the degrees to which mechanistic and emergent behaviours exist at the IPO.

## 5.3 Discussion IPO environment

### 5.3.1 Discussion

From the pictorial summary provided in the introduction to this chapter, figure 5.3 summarises the relationships between the IPO environment data theme, and the CAS behaviours of fitness landscape (Wright, 1932; Kauffman and

Levin, 1987), tipping or bifurcation points (Prigogine and Stengers, 1984; Gladwell, 2000), and co-evolution (Pagie, 1999; Mitleton-Kelly, 2003).

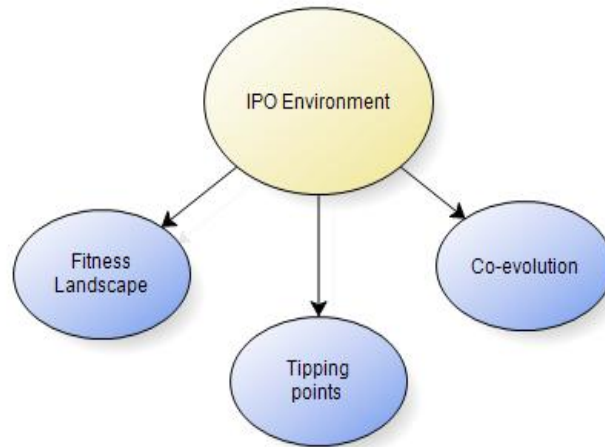


Figure 5.3: Relationship between the data theme IPO environment and CAS behaviours

#### 5.3.1.1 Fitness landscape

The notion of fitness landscape developed by Wright (1932) and extended by Kauffman and Levin (1987), is presented in the literature (section 2.6.2.1), as a concept of an organisation taking a snap shot of its environment at any given time, as a means to assess its “fitness”; where fitness of the organisation, is interpreted as the ability of the organisation to gain competitive advantage (Merry, 1999; Murmann, 2003). In this context, “fitness” is depicted as a population of strategies, represented as a terrain of hills and valleys, where good strategies are considered as sitting on higher hills (Boulton and Allen, 2004). This “population of strategies” depict the position of not only the organisations’ current strategy, but also that of its competitors and potentially competing strategies, and hence representing all possible strategies. This allows the organisation to assess the effectiveness of their current strategy, and make any necessary adjustments in order to obtain the optimal point, or the points in the terrain of hills, and hence gain competitive advantage. However, what is explicit from the literature is that the notion of fitness landscape is not able to predict the future fitness of the strategies; but highlights that strategies will change at some point in time, as a

result of the organisation evolving and interacting with other organisations' within the business eco system (Kauffman and Levin, 1987; Stacey, 2000).

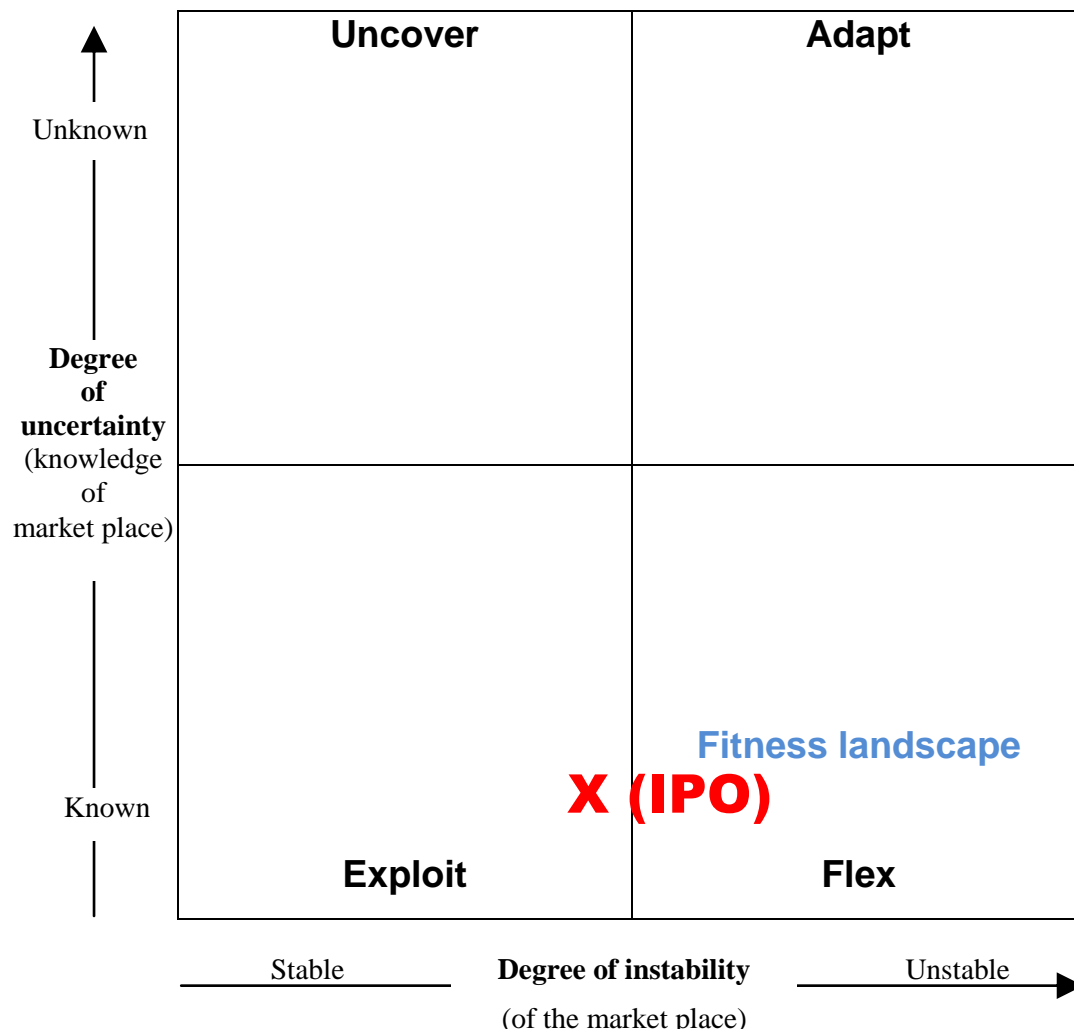


Figure 5.4: Fitness landscape and the complexity strategy matrix (source Boulton and Allen (2004, p. 10))

As such “hills may become valleys and valleys hills”, and therefore what may be considered as a winning strategy, may become extinct, if for example there is too much imitation (Boulton and Allen, 2004). The established complexity strategy matrix which was presented in the literature (section 2.7.4), depicts the fitness landscape as being in the ‘Flex’ quadrant (figure 5.4), in which the organisation’s knowledge of the market place is considered as known, and the degree of instability as uncertain, to the extent that, the organisation believes that the environment will change at some point in the future (Boulton and

Allen, 2004). In this context, the organisation can be considered as dealing with uncertainty which they are familiar with, and therefore the changing terrain or fitness landscape is considered known (Boulton and Allen, 2004).

As indicated in section 5.2, the IPO is considered to be positioned at point 'X' on the complexity strategy matrix in light of the IPO primarily regarding the knowledge of the market place as being known, and the degree of instability of its environment being considered to be relatively predictable, or what may be considered as a state of bounded instability (Stacey, 1992, 1993). Whilst the IPO consider that recent changes and potential changes in the future are within their comfort zone (Int 11, 14, 17, 24), the complexity strategy matrix and the notion of the fitness landscape, highlight the need for the IPO to recognise that their strategy will change at some point in time, in light of the IPO evolving and interacting with other organisations' within the IP business ecosystem, such as EPO and OHIM. For example as the findings recognise, that should the EPO and / or OHIM change their pricing strategy, or services offered, this may result in the IPO losing customers (Int 3, 16, 23), and hence requiring the IPO to seek alternative strategies, as a means to regain their competitive advantage. In this respect, the IPO would be encouraged to take regular snap shots of the environment, to assess the "fitness" of their strategy, in light of competitor's strategies, and potentially competing strategies, as a means of obtaining the optimal point in the terrain of hills, and thereby maintain their competitive advantage. Therefore it is suggested that the IPO may benefit from finding high peaks within the IP landscape, by avoiding equilibrium and stasis, through the deployment of platoons of hikers, to facilitate potential new strategies through experimentation, diversity and parallelism, which are necessary for innovation (Suh et al., 2004; Vecchiato, 2012). Consequently the IPO could consider managing the short and long term with different approaches, where future scenarios may be considered without risking the organisations' long-term future, in light of some hikers' succeeding and some failing (Beinhocker, 2006).



### 5.3.1.2 Tipping / bifurcation points

The notion of the fitness landscape (section 5.3.1.1), argued that the organisation's strategy will change at some point in time, as a result of the organisation evolving and interacting with other organisations' within the business eco system (Kauffman and Levin, 1987; Stacey, 2000), which was demonstrated through the complexity strategy matrix through the need to 'flex' within a changing terrain or fitness landscape that is known (Boulton and Allen, 2004). However, as previously established through the notion of fitness landscape, the IPO have an awareness that certain influential stakeholders within the IP ecosystem may have an impact upon the IPO, for example, the EPO changing pricing strategy or services offered, would result in the IPO seeking alternative strategies, as a means to regain their competitive advantage (Int 3, 5, 11). This propensity of an organisation to behave for a length of time, in what is described as an almost predictable and linear fashion, and then seemingly 'tip' to some new and not necessarily desirable state is reflective of the concept of tipping or bifurcation points (Gladwell, 2000). Accordingly, the established complexity strategy matrix framework from the literature, depicts tipping or bifurcation points in the 'Exploit' quadrant (figure 5.5), in which both the organisation's knowledge of the market place and degree of instability are regarded as known and certain (Boulton and Allen, 2004). The organisation can be considered as being able to "predict the future, can control it and exploit it" (Boulton and Allen, 2004), but only during "periods of relative stability, until something unexpected and unpredictable happens" (Boulton and Allen, 2004). In this respect, during this time of stability an organisation can 'exploit' its competitive advantage and maximise the organisations' 'cash cow', which from the general consensus from the findings indicate that the IPO primarily view the environment as stable or certain (shown as point X in figure 5.5), and as such may therefore exploit their position. However, as a result of changes in the environment and increased uncertainty (Makridakis and Heau, 1987; Courtney et al. 1997) this has the capacity at some point in time, to 'tip' the organisation into some new and not necessarily desirable state, (Gladwell, 2000), where the organisation/living system moves away from equilibrium, until a point of stability is found, and where a new structure may originate spontaneously

(Prigogine and Stengers, 1984; Devaney, 1992), with the development of a new strategy.

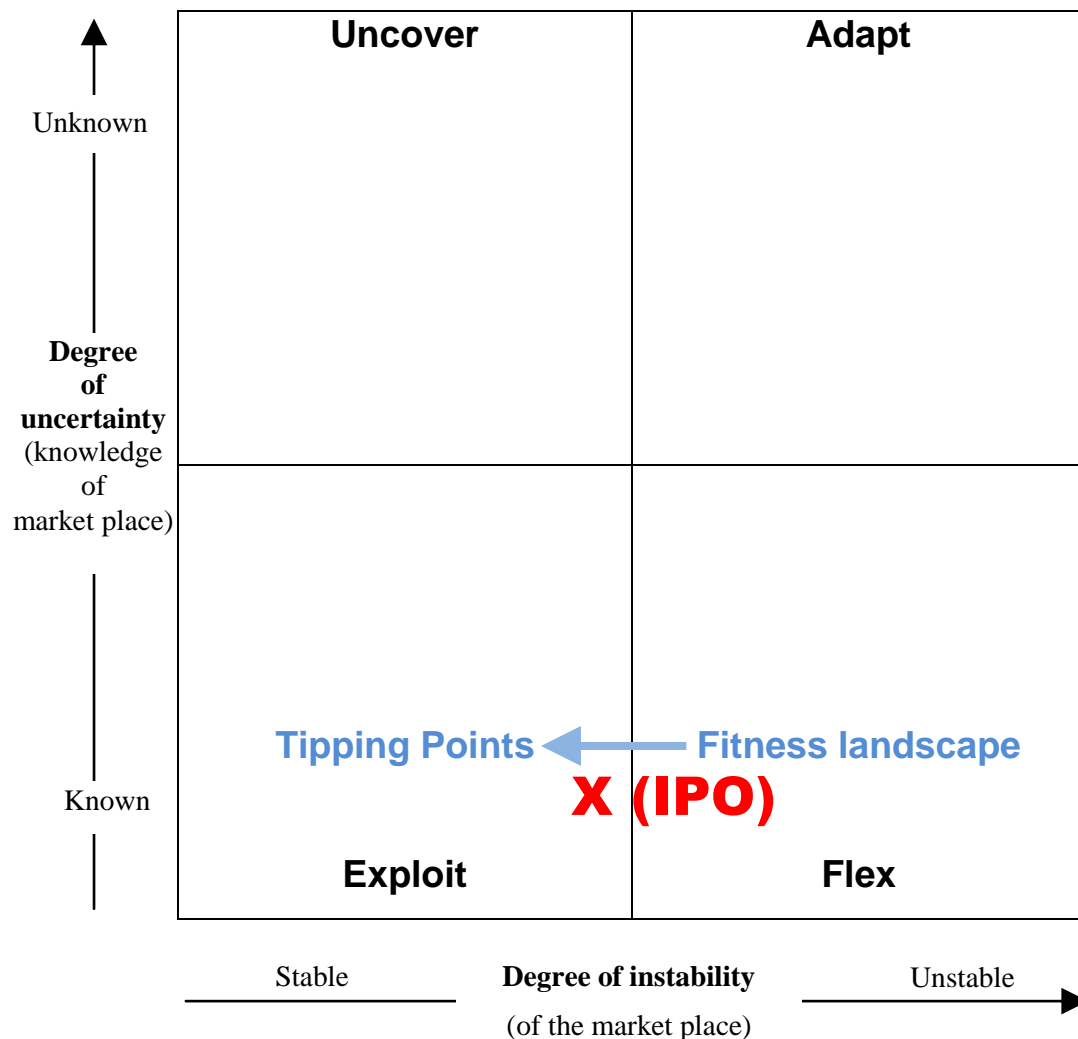


Figure 5.5: Tipping / bifurcation points and the complexity strategy matrix (source Boulton and Allen (2004, p. 10))

Accordingly, it is at this point, that the organisation may have several different paths open to it, where the choice of path is essentially random and therefore unpredictable (Cramer, 1993; Hunt, 1995); which may have the impact, of moving the organisation into the 'Flex', 'Adapt' or 'Uncover' quadrants of the established complexity strategy matrix framework, depending upon the degree of uncertainty and instability in the market place. In this respect the findings acknowledge, that the IPO have experienced changes in their environment that may in other circumstances 'tipped' the IPO into what is

considered as an undesirable state (Gladwell, 2000), through an unexplained and unforeseen increase in demand, at a time when it was considered by the IPO that demand should have decreased, which resulted in demand exceeding resources (Int 11, 17, 23). However, whilst these circumstances would have had the potential in most instances to 'tip' an organisation into an undesirable state, due to what the findings indicate as the existing backlogs and the slow rate of change in the IP framework (Int 8, 20, 24), this had the affect of dampening or reducing the potential 'tipping' point, which resulted in the IPO maintaining its current strategy. Accordingly, in a similar manner to the inability of the fitness landscape to predict the fitness of the organisation, the concept of bifurcation points, is also unable to predict when the organisation will no longer follow the predictable and linear path, before tipping into some new and not necessarily desirable state. In this instance, the literature points to an organisation scanning its horizon, to identify potential tipping points, in order to proactively seek alternative strategies as a means to overcome, or reduce the impact of changes that could 'tip' the organisation (Suh et al. 2004; Vecchiato, 2012). However the general consensus from the findings is that not a great deal of emphasis is placed on scanning the environment (Int 17, 20, 23), which is contrary to the explicit literatures, that reflect that organisations' need to proactively scan the horizon for potential bifurcation points, which will have a greater propensity of reducing their impact on the organisation (Gladwell, 2000).

The findings indicate that horizon scanning does not appear to be a feature of the overall planning process of the IPO, with the exception of the policy directorate who undertake horizon scanning at a departmental level, as a critical means of keeping abreast of political issues and developments in Europe (Int 4, 11, 18). Therefore it is suggested that the IPO adopt a coherent office wide horizon scanning strategy as a means to identify potential 'bifurcation points'. As such they will have a greater propensity to seek alternative strategies within the fitness landscape, as a means to overcome, or reduce the impact of changes, that could 'tip' the organisation into an undesirable state (Suh et al., 2004; Vecchiato, 2012).

### 5.3.1.3 Co-evolution

The notion of fitness landscape (section 5.3.1.1) and the concept of bifurcation points (5.3.1.2) reflected the propensity of the organisation, to behave for a length of time in what is described as an almost predictable and linear fashion, and then seemingly 'tip' to some new and not necessarily desirable state (Gladwell, 2000), as a result of the impact of the organisation evolving and co-evolving with other organisations' within the business ecosystem (Merry, 1999; Murmann, 2003). In this respect, the concept of co-evolution is presented in the literature (section 2.6.2.1), through the evolution of an organisation within a network of other interacting organisations', in which the dynamics of the interaction are constantly changing in a non linear manner, as a result of both competition and co-operation (Seel, 1999; Stacey, 2000; Mitleton-Kelly, 2003). Accordingly the literature presented, argued that there are three types of co-evolution which results in different impacts on the organisation (Pagie, 1999). As such competitive co evolution may be observed in which competitors may make a move, in order to gain competitive advantage in relation to each other through price wars, or the development of competing technologies. Mutualistic co evolution may be observed, when organisations' develop capabilities for co-operation and complementation in order to compete with a third party; and exploitative co evolution may be observed, in which one organisation is significantly more powerful than the others (Pagie, 1999).

A number of preconditions were argued, that need to be fulfilled in order to have meaningful co evolution, through scarcity of customers that induces selection pressure, a conscious choice that enables the organisation to change, interconnectedness of organisations' that enables each to have an effect on each other, and feedback processes which carry the long term consequences of co evolution (Peltoniemi, 2005b). From the established complexity strategy matrix identified in the literature, co-evolution is portrayed in the 'Adapt' quadrant (figure 5.6), in which both the organisation's knowledge of the market place and degree of instability, are regarded as unknown and uncertain (Boulton and Allen, 2004), in which co-evolution is considered synonymous to adaptation, through the notion that the system

never reaches equilibrium, and continues to strive for progress through growth or sustainability (Kauffman, 1993).

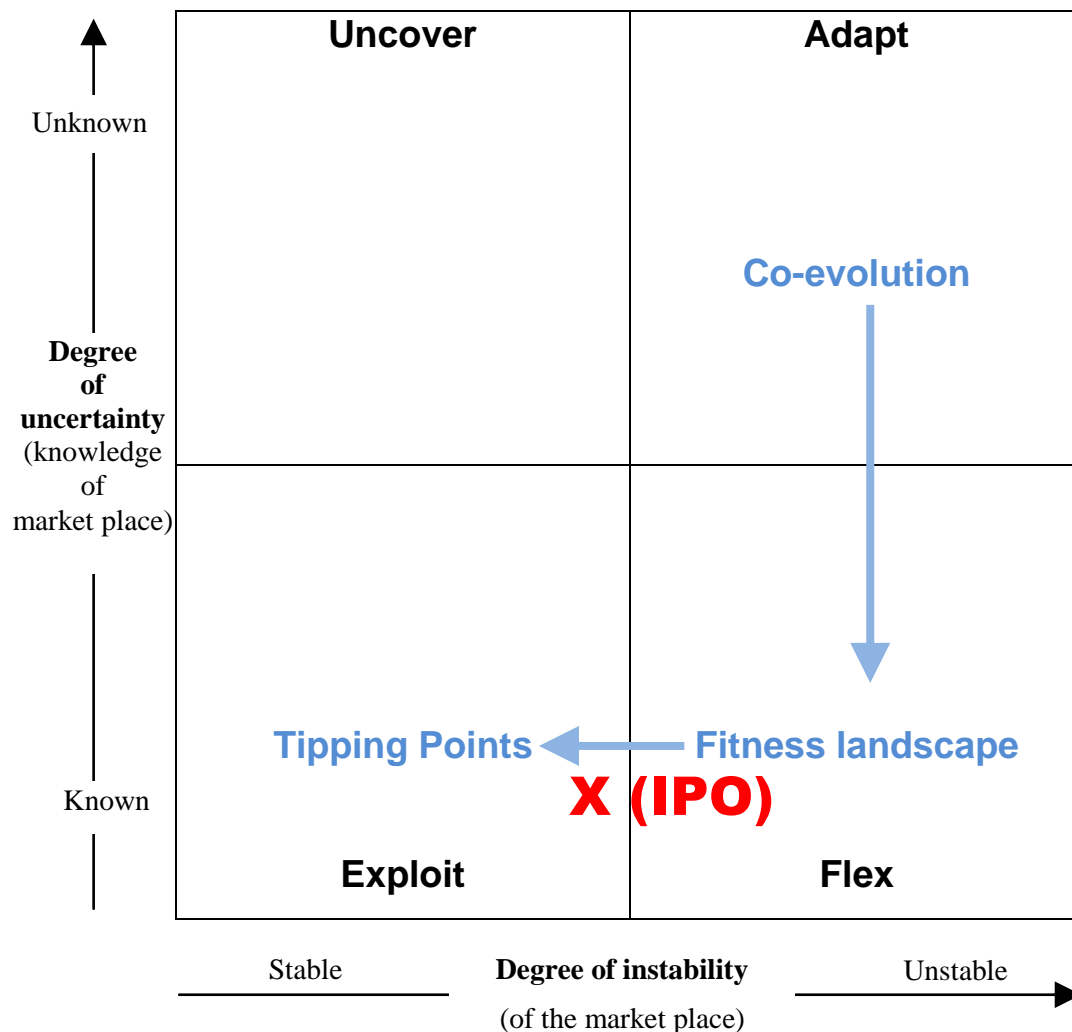


Figure 5.6: Co-evolution and the complexity strategy matrix (source Boulton and Allen (2004, p. 10))

Now whilst the IPO view the fitness landscape or environment as primarily certain, which is shown as point X, in figure 5.6, it is possible to argue that the literature indicates a relationship between co-evolution, the fitness landscape and tipping points, in which the underlying theme of uncertainty is created through the impact of different organisations' within the business eco system (Murmann, 2003). As a result of what the literature indicate as co-evolution inducing change between organisations' that are connected with each other (Peltoniemi, 2006), in turn changes the fitness of one organisation (Merry,

1999), which in turn has the potential to 'tip' another organisation into an undesirable state (Gladwell, 2000). The general consensus from the findings, indicate that the IPO are collaboratively working with the EPO, OHIM, WIPO, and other national IP Offices (Int 9, 10, 16, 19, 20, 24), in a variety of ways as a means to shape the IP agenda to ensure the system is fit for purpose (Peltoniemi, 2006). This behaviour was evidenced in the findings primarily through the mutual working agreements established by the policy directorate, that are aimed at reducing backlogs and duplication of work; and the sharing of a case management IT system (Int 8, 12, 13, 19), as a means for the IPO to enhance its IT capability. However whilst this mutualistic co-evolution may be observed (Pagie, 1999), the findings indicate that the IPO have experienced what may be described as the negative impact through an increase of work for UK patent examiners, and the IPO being forced to develop its own case management system as a result of the EPO withdrawing their support (Int 12, 13, 15). In this respect, the IPO should be mindful of the long term consequences of their collaborative working, in order to ensure the union is meaningful (Pagie, 1999; Peltoniemi, 2005b). This may be particularly relevant, with regard to the IPO's continued efforts to influence the IP agenda, and the general focus within the IP framework for a harmonised IP system (Int 8, 9, 10, 14, 24). In this respect, the IPO are entering or influencing legislation and/or agreements, that not only effect the IPO for the short term, but also the long term; in which the advantages and influences could conceivably erode over time, leading to exploitation as opposed to mutual co-evolution (Pagie, 1999), and as such, whilst IP Offices may be considered as behaving in a mutualistic manner to harmonise the IP system, this may result in IP Offices having little or no distinguishing competitive advantages in the long term. Exploitative co-evolution may occur, where the larger IP Offices such as the EPO and OHIM, may dictate the overarching IP strategy, and therefore, a winning strategy for the IPO may become extinct, if there is too much imitation (Boulton and Allen, 2004). Taking account of the findings of the study, and the literature on co-evolution, it is suggested that the IPO may therefore wish to consider, using their competitive advantage, associated with their knowledge and reputation within the IP world (Int 8, 9, 10, 24), through what the findings indicate as both a rights granting authority, and an in house IP

policy maker (Int 10, 12, 19, 24), as a means to maintain their competitive advantage, and ensure both the short and long term consequences are favourable, when negotiating at international level; and that they are not lead into a false sense of security, in light of the slow rate of change of the current IP system (Int 16, 20, 24), and as such this behaviour may minimise the potential for the IPO to be 'tipped' into an undesirable state, in which the complexity strategy matrix points to IPO moving into the 'Adapt' quadrant, in which the IPO's knowledge of the market place and degree of instability are regarded as unknown and uncertain (Boulton and Allen, 2004), which would require the IPO to adapt and respond to these changes, in order to regain its competitive advantage, through emergent behaviour (Mitleton-Kelly, 2003; Seel, 2003).

## **5.4 Discussion IPO decision making**

### **5.4.1 Discussion**

From the pictorial summary provided in the introduction to this chapter, figure 5.7 summarises the relationship between the decision making data theme and the CAS behaviour of emergence (Mitleton-Kelly, 2003; Seel, 2003).

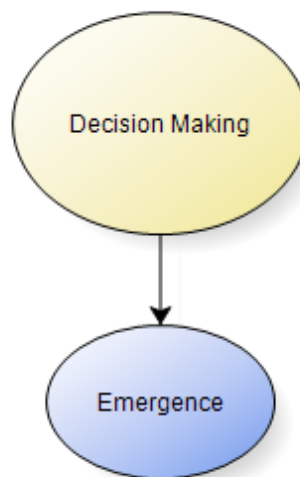


Figure 5.7: Relationship between the data theme IPO decision making and the CAS behaviour

#### 5.4.1.1 Emergence

From the previous discussion of the environment data theme (sections 5.3.1.1 -5.3.1.3), the notion of fitness landscape (Wright, 1932; Kauffmann and Levin, 1987) draws attention to the landscape in which the organisation sits, as one which has the capacity to change over a period of time, as a result of both evolution of the organisation, and co-evolution with other organisations' within its business ecosystem (Merry, 1999; Murmann, 2003). In this respect, this change may have the capacity to 'tip' the organisation, into what is regarded as an undesirable state (Prigogine and Stengers, 1984; Gladwell, 2000), in which the knowledge of the marketplace, and the degree of instability are considered as unknown and uncertain, and as such considered to be the point, at where an organisation is at its most unpredictable (Boulton and Allen, 2004). The literature presented the concept of emergence or emergent behaviour (section 2.6.2.2), as a means for the whole organisation, to adapt and respond to changes in the environment, and thereby regain its competitive advantage (Peltoniemi, 2005a), hence emergent behaviour, is synonymous with the organisation having evolving strategies, or a population of competing business plans, that evolve over time, to achieve new sources of temporary advantage, in relation to its competitors (Mintzberg, 1987; Beinhocker, 2006). As shown in the complexity strategy matrix for the study, the concept of emergence is shown in the 'Adapt' quadrant (figure 5.8), in which the organisation is considered at its most unpredictable, but has the capacity through evolution (Seel, 2003, Mitleton-Kelly, 2003) and co-evolution (Murmann, 2003; Mitleton-Kelly, 2003), to create new products and services, as a means to respond to the environment, and thereby seek new competitive advantage (Boulton and Allen, 2004). However, as shown previously (section 5.2), the findings of the study indicate the IPO primarily regard the knowledge of the market place as being known, and the degree of instability of its environment is considered to be relatively predictable, and hence positioned in the 'Exploit' quadrant at point 'X' in figure 5.8. These findings are concurred and further established, through the stability and order of the IPO's decision making processes, which indicate that decision making, primarily revolves around a planning regime for the production of the corporate plan (Int



5, 16, 18), which set out the key objectives and targets for the forthcoming year(s) (Ansoff, 1965; Porter, 1996).

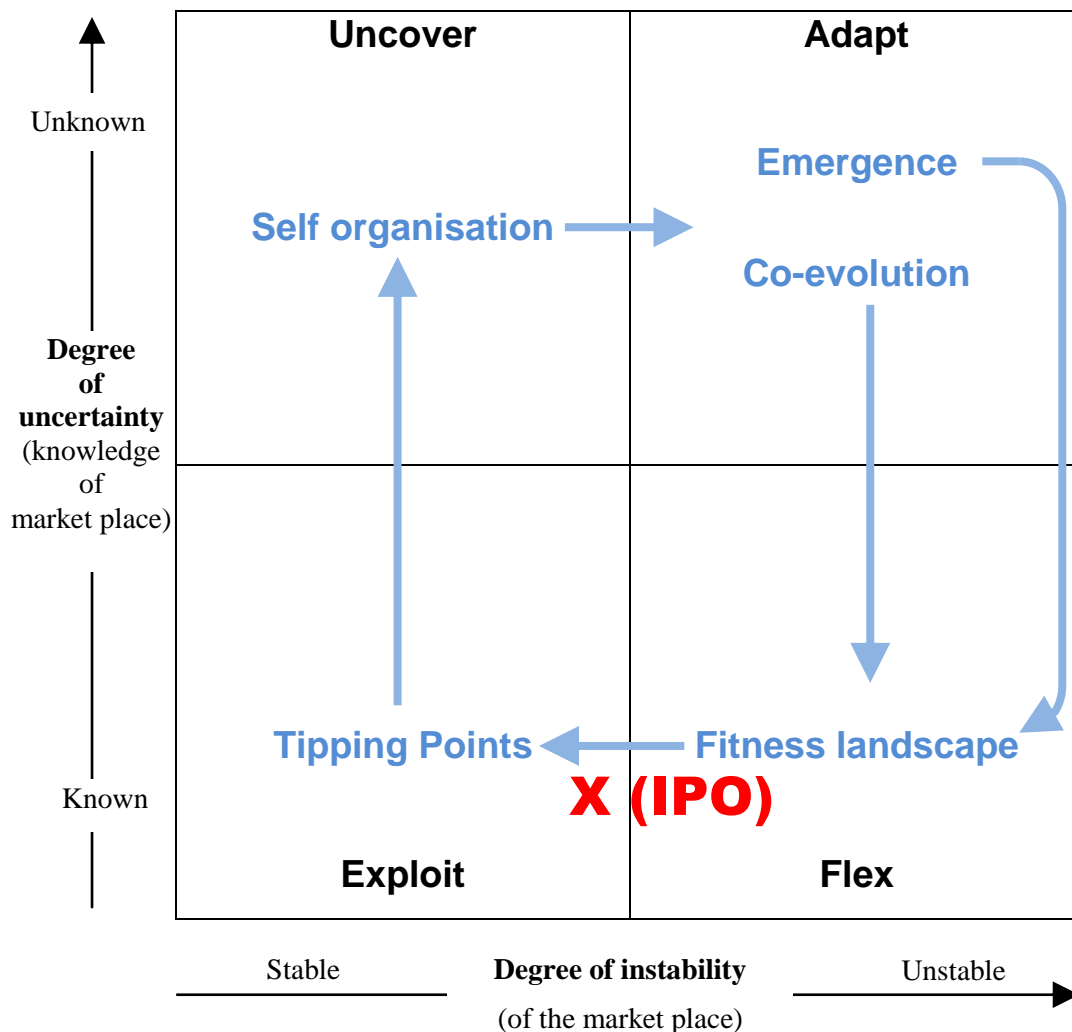


Figure 5.8: Emergence and the complexity strategy matrix (source Boulton and Allen (2004, p. 10))

Furthermore, this regime is also associated with numerous rules, regulations and processes, which are driven and controlled by the IPO board (IPOB), in a top down fashion (Int 5, 11, 17), in which the literature presented, indicate that the IPO are currently exploiting the optimal path, in which the behaviour of competitors and customers are considered rational and unchanging (Ansoff, 1965; Learned et al., 1965; Boulton and Allen, 2004), in light of the IPO having an abundance of information about their customers, competitors, and government regulations (Duncan, 1972). Accordingly, the current IPO

behaviour is synonymous to a planning regime, in which general patterns may be identified and thereby projected in a predetermined manner (Mintzberg, 1998), in which the underlying thinking resembles closed change, or situations of equilibrium, in which there is the assumption, that there is a clear linear relationship between cause and effect (Makridakis and Heau, 1987; Stacey, 1990; 1992; 1993). However, as indicated in the earlier discussion of bifurcation points and co-evolution (sections 5.3.1.2 - 5.3.1.3), the IPO are not immune from being 'tipped' into an undesirable state, which would move the IPO from the 'Exploit' to the 'Adapt' quadrant, in which the future is unpredictable both in qualitative and quantitative terms, and where the future is considered so diverse that inconceivable changes can take place (Boulton and Allen, 2004). The uncertainty in the environment renders planning and forecasting as not relevant, since the details about the future and the degree of events, are considered difficult to assess, and hence make predicting patterns difficult to plan for (Makridakis and Heau, 1987; Stacey, 1990; 1992; 1993), hence the need to adapt in order to respond to changes in the environment in order to regain its competitive advantage (Peltoniemi 2005a), through the adaptation of existing strategies, or the utilisation of a population of competing business plans (Mintzberg, 1987; Beinhocker, 2006).

Accordingly, as shown in figure 5.8, the literature indicates that emergent behaviour is the result of the process of self organisation (Kauffman, 1993; Gell-Mann, 1994), in which the organisation is considered far from equilibrium (Goldstein, 1999) or on the edge of chaos (Stacey, 1993; Gell-Mann, 1994), which explicitly relies on the spontaneous formation of ideas from the agents, as a means to respond to the environment or landscape (Gell-Mann, 1994; Ehin, 2013). However, contrary to the literature, the findings indicate that the ability of the IPO to adapt, in a responsive and spontaneous manner to changes within its business eco system, are considered to be restricted, as a consequence of the perceived restrictions associated with its trading funding status, and the processes surrounding the top down approach to decision making (Int 5, 11, 15, 17). The findings indicate that the control from the top of the organisation, is synonymous with a lack of appropriate delegation and a risk averse culture of the decision makers (Int 5, 11, 13, 14, 17, 24). These

have the impact of slowing down the decision making process, which results in bottlenecks, and prevent quick and decisive decisions (Int 11, 13, 14, 24), to allow the adaptation of existing IPO strategies to respond to change (Mintzberg, 1987; Beinhocker, 2006). Furthermore, the findings also indicate that as part of the planning process, the IPO model shifts in demand (Int 16, 18), however as the findings indicate they do not consider themselves to be skilled in scenario planning, and dismiss the need for such skills, in light of not requiring to plan for extremes, or uncertainty (Int 15, 20, 24). As such, the literature indicates that one way of overcoming or addressing the shortcomings of the planned approach to management, is through a population of competing business plans (Beinhocker, 2006), and therefore the IPO may wish to consider enhancing their scenario planning capability. Consequently the IPO may view planning as a learning process for the whole of the organisation (Argyris, 1990; Smith and Taylor, 2000) and a means to facilitate emergent behaviour through the shared understanding of what the IPO stands for, where it is going, and what kind of world it wants to live in, and most importantly how it intends to make that world a reality (Nonaka, 1994), in contrast to planning as a means to control the organisation.

## **5.5 Discussion IPO communication**

### **5.5.1 Discussion**

From the pictorial summary provided in the introduction to this chapter, figure 5.9 summarises the relationship between the communication data theme and the CAS behaviours of self organisation (Kauffman, 1993; Gell-Mann, 1994) and The Learning organisation (Argyris, 1990; Smith and Taylor, 2000).

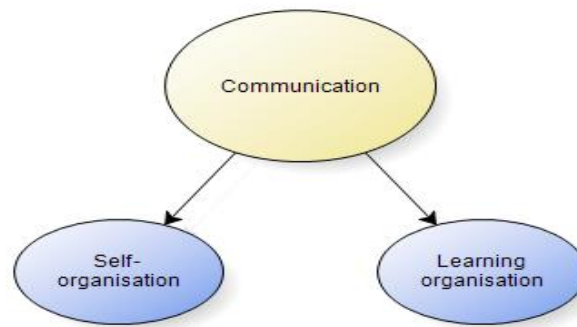


Figure 5.9: Relationship between the data theme IPO communication and the CAS behaviours

#### 5.5.1.1 Self organisation and learning

From the previous discussion of the IPO's decision making processes (section 5.4.1.1), the literatures indicate a need for organisations' to evolve their strategies during periods of uncertainty, through the concept of emergence or emergent behaviour; as a means for the whole organisation to adapt, and respond to changes in the environment and thereby regain its competitive advantage (Mintzberg, 1987; Peltoniemi, 2005a; Beinhocker, 2006). It is at this point, that the literatures indicate the concept of self organised behaviour (section 2.6.2.3), as the creation of new order or emergent patterns, which arise in the absence of a central controller, from either an external or internal source (Stacey, 1993; Gell-Mann, 1994). This creation of new order or emergent patterns, is reflected through the social dynamics, that are considered an inherent part of self organising organisations' (Ehin, 2009), as a means for the individuals of the organisation, to exchange identities, differences and ideas, as part of the process to respond to changes in the environment, and thereby regain its competitive advantage, through the exploration of new opportunities (Stacey et al., 2000). This interaction of individuals at all levels, facilitates the adaptive seeking and emerging behaviour of the organisation, and supports an inclusive bottom up approach to decision making (Goldstein, 1999), and hence by implication, necessitates good quality communication lines (Stacey, 1993). However the general consensus from the study, indicate that communication is primarily top down (Int 1, 6, 7, 20, 24), through formal mechanisms and channels (Espinosa et

al., 2007). In contrast, the literature presented pointed to the organisation harnessing the informal structure (Ehin, 2009), that are associated with the social ties through the interaction of individuals, which are considered to be highly adaptive, moving both diagonally and elliptically, and even skipping entire functions to get the job done (Brown and Eisenhardt, 1998; Pascale et al., 2000), leading to the arising of novel and coherent structures within the organisation, that have the capacity to facilitate emergence (Brown and Eisenhardt 1998; Mitleton-Kelly, 2003). The literatures endorse organisational structures, that can facilitate free and open communication, and encourage the sharing of ideas and knowledge at all levels of the organisation (Phillips et al., 2003), and as such facilitate the capacity of the organisation to collectively learn and enhance the organisation's ability to adapt and respond to the changing circumstances in its business ecosystem (Morgan, 1996; Cooksey, 2003).

As shown in figure 5.10, the complexity strategy matrix shows the concept of self organisation in the 'Uncover' quadrant, in which the degree of knowledge that the organisation has about the environment is considered uncertain, and the degree of instability in the market place is considered stable (Boulton and Allen, 2004). It is within this quadrant, that the organisation is considered as 'uncovering' new products and / or services, as a means to respond to the environment, and thereby increase or regain competitive advantage, through the exploration of research and pilot schemes (Boulton and Allen, 2004). As such the literatures indicate that learning is viewed as a key element of the process of self organisation, which is depicted as a shaded keyhole in figure 5.10, to represent the impact of learning on self organisation, but also its relevance to all of the regimes depicted by the matrix. In this respect tacit knowledge is considered a key source of competitive advantage (Nonaka and Takeuchi, 1995; Ambrosini and Bowman, 2001), and is considered a positive impact of the interaction of agents through the formal and informal structure, leading to the organisational 'sweet spot' (Pascale et al., 2000; Ehin, 2009), and as such learning can facilitate the organisation to move to the 'uncover' quadrant from either the 'exploit', 'flex' or 'adapt' quadrants, whether this be through choice, or in response to the evolution and co-evolution (Pagie, 1999)

of the organisation, within its business ecosystem. As such an organisation may move from the 'exploit' quadrant to the 'adapt', in order to seek modifications to an existing product and/or service, and hence extend the life of a product and/or service they are exploiting and maintain its competitive advantage. A move from the 'flex' to 'uncover' quadrant, may be in light of an organisation searching their fitness landscape for new strategies (Kauffman and Levin, 1987), which may involve the organisation moving to new sectors, through the exploration of research and pilot schemes (Boulton and Allen, 2004), as a means to maintain or increase their competitive advantage.

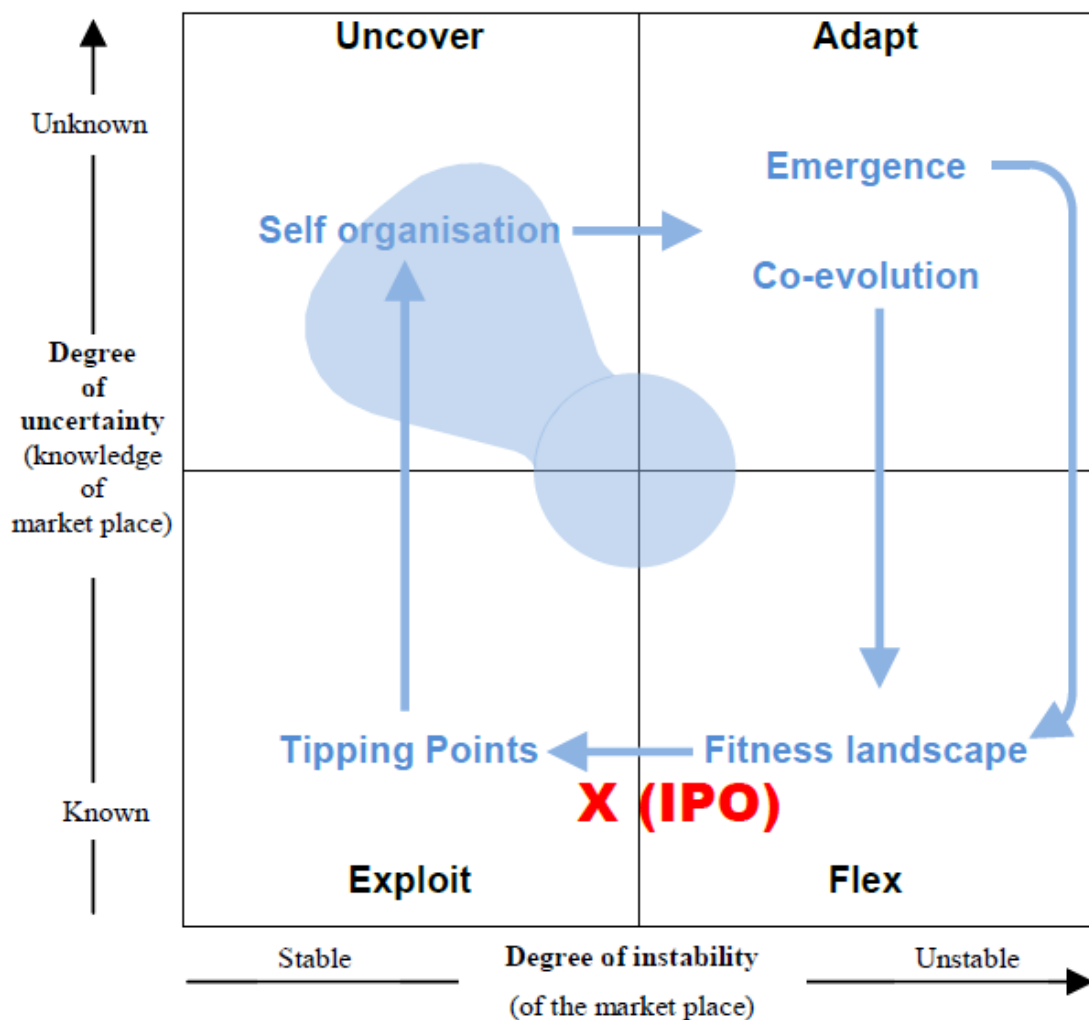


Figure 5.10: Self organisation (learning) and the complexity strategy matrix (source Boulton and Allen (2004, p. 10))

Lastly, a move from the 'adapt' to the 'uncover' quadrant, may be in response to an organisation being 'tipped' into an undesirable state (Prigogine and Stengers, 1984; Gladwell, 2000), and requiring to seek new products and/or services as a means to regain its competitive advantage (Boulton and Allen, 2004). However, whilst the IPO is primarily considered to be in the 'exploit' quadrant at point 'X', the formal top down approach to communication, is considered appropriate to allow the organisation to be controlled, and hence maximise the exploitation of the marketplace, since it is the senior managers that are aware of the certain environment and what can be achieved, and hence exploit the optimal path (Boulton and Allen, 2004; Solow and Szmerekovsky, 2006). Whilst this control is considered appropriate when the environment is stable, should the IPO wish to 'uncover' new products and/or services, as a means to maintain, increase or regain competitive advantage (Boulton and Allen, 2004), whether this be through choice, or in response to the evolution and co-evolution of the IPO within its business ecosystem, the literatures indicate that the IPO need to embrace learning through emergent behaviour (De Geus, 1997). It is at this point, that it is not always obvious to managers, what the outputs of the organisation should be for optimal organisational performance, and therefore control should be replaced by the interaction of all individuals to come up with solutions to the problem or issue (Solow and Szmerekovsky, 2006). In order for the IPO to explore new strategies, the organisations' structure needs to allow this interaction at all levels, in order to facilitate this adaptive seeking and emerging behaviour (Goldstein, 1999). It is suggested the IPO's structure should facilitate free and open communication, and encourage the sharing of ideas and knowledge at all levels of the organisation (Phillips et al., 2003), and thereby facilitate collective learning (Cooksey, 2003). Although the findings indicate that the IPO communicates freely, using a large variety of formal communication channels, the communication was not always deemed to be effective (Int 2, 11, 16, 22, 24), and as such the findings indicate that although the IPO provide a wealth of communication, it was not always clear (Int 3, 14, 24); and in many instances was not consistent within and across directorates (Int 5, 9, 11). A key finding points to the existence of a blockage at middle management level, which results in a disparity of information and knowledge

between the top and lower echelons of the IPO (Int 3, 13, 17, 23). This has resulted in staff indicating that they did not always have the opportunity to contribute to decisions, and were often not consulted and engaged with at the right time (Int 1, 3, 7, 11, 15). To facilitate free and open communication, the IPO may wish to ensure consultations engenders an inclusive bottom up approach, to facilitate emergent decision making (Goldstein, 1999); increase its use of cross functional teams or flexible basic units (Jenner, 1998), which are currently only evident in the policy areas, as a means to promote connectivity (Brown and Eisenhardt, 1998; Goldstein, 1999). Further, to overcome the perceived communication blockage at middle management, the IPO may wish to harness its informal network, associated with the social ties linked with the interaction of its individuals (Brown and Eisenhardt, 1998; Goldstein, 1999), as a means to develop its current formal communication channels (Brown and Eisenhardt, 1998; Pascale et al., 2000), and thereby encourage, the sharing of ideas and knowledge at all levels of the organisation (Phillips et al., 2003), to facilitate emergent behaviours (Brown and Eisenhardt 1998; Mitleton-Kelly, 2003).

## **5.6 Discussion IPO creativity, innovation and risk**

### **5.6.1 Discussion**

From the pictorial summary provided in the introduction to this chapter, figure 5.11 summarises the relationship between the creativity, Innovation and risk data theme and the CAS behaviours of self organisation (Kauffman, 1993; Gell-Mann, 1994), and The Learning organisation (Argyris, 1990; Smith and Taylor, 2000).





Figure 5.11: Relationship between the data themes IPO creativity, innovation and risk and CAS behaviours

#### 5.6.1.1 Self organisation and learning

The earlier discussion of the IPO communication (section 5.5.1.1), pointed to self organised behaviour (section 2.6.2.3), as the creation of new order or emergent patterns (Stacey, 1993; Gell-Mann, 1994), through the social dynamics of the interaction of individuals of the organisation (Ehin, 2009), which facilitates adaptive seeking and emergent behaviour, to respond to changes in the environment (Stacey et al., 2000). This relationship between emergent behaviour (Mitleton-Kelly, 2003; Seel, 2003), through self organisation (Ehin, 2009), is viewed as being at its optimum, when the organisation is operating on the 'edge of chaos' (Gell-Mann, 1994; Pascale et al., 2000), in which the literature point to an organisation, as being at its most receptive, to be creative and innovative (Kauffman, 1993; Frederick, 1998). This self organised construct is through the social dynamics of management (Ehin, 2009) that facilitates and promotes an environment of free and open communication, that allows the exchange of ideas and knowledge at all levels of the organisation (Phillips et al., 2003). Consequently collective learning (Cooksey, 2003) may be utilised in the exploration of new strategies (Boulton and Allen, 2004), to provide solutions to problems or issues that are not always obvious from either a central controller (Goldstein, 1999), or managers (Solow and Szmerekovsky, 2006). As a result to facilitate emergent

behaviour, the literatures point to an organisation embracing its creative and innovative potential (Mintzberg, 1994 a, b & c; Hamel, 1996), which encourages risk taking, experimentation and innovation, as a means to respond to the dynamic environment (Smith and Taylor, 2000; Cooksey, 2003). These emergent behaviours allow an organisation to learn in an emergent fashion, thereby stimulating thinking retrospectively (Mintzberg, 1998), and places an emphasis on engaging the staff through “the involvement of all in the organisation” (McHugh et al., 1998), by empowering each person within the organisation, to participate in creative problem solving with a shared vision (Senge et al., 1994). In order to empower the individuals, the literatures point to the need for an organisation to have leaders that can “facilitate”, “mentor” and “empower” their teams (Cooksey, 2003), in which the leadership role is diffused and vested amongst the staff, in contrast to a few at the top (Yuki and Van Fleet, 1992; DuBrin, 2001). Where individuals are also encouraged to question and confront existing processes and practices, and adopt creative and innovative approaches (Herbig, 1990; Lewin, 1992), through the process of not only learning, but to unlearn (Wang and Ahmed, 2003). The literatures point to the advantages of creative insight and human touch, associated with individuals within a creative and innovative organisational environment. In that, although product differentiation which once achieved can be quickly eroded, in comparison the development of a creative and innovative workforce cannot readily be duplicated as a means to seek competitive advantage (Pfeffer, 1995).

As previously indicated through the discussion of the IPO communication (section 5.5.1.1), the concept of self organisation is shown in the ‘Uncover’ quadrant of the complexity strategy matrix, which was presented previously in figure 5.10. In the ‘uncover’ quadrant, the degree of knowledge that the organisation has about the environment is considered uncertain, and the degree of instability in the market place is considered stable (Boulton and Allen, 2004), and as such the behaviour of the organisation is considered as ‘uncovering’ new products and/or services, as a means to maintain increase or regain competitive advantage, through the exploration of research and pilot schemes (Boulton and Allen, 2004). An organisation may move to the

‘uncover’ quadrant from either the ‘exploit’, ‘flex’ or ‘adapt’ quadrants, whether this be through choice, or in response to the evolution and co-evolution of the organisation, within its business ecosystem. As previously indicated (section 5.2) the findings indicate that the IPO primarily regard their knowledge of the market place as being known, and the degree of instability in its environment to be relatively predictable and hence positioning the IPO at point ‘X’ on the matrix (figure 5.10), and within the ‘Exploit’ quadrant. As such, it may be considered that there is no requirement at this stage for the IPO to be creative or innovative, since the market place is considered to be known and stable, and as such it can be argued that it is therefore appropriate for the IPO to allow the organisation to be controlled by its senior managers, who are aware of the certain environment and what can be achieved, and hence exploit the optimal path (Boulton and Allen, 2004; Solow and Szmerekovsky, 2006), which is concurred in the findings through the use of objectives and targets imposed by managers, to manage workloads (section 5.4.1.1). Whilst this control may be considered appropriate when the environment is stable, should the IPO wish to ‘uncover’ new products or services, as a means to maintain, increase or regain competitive advantage (Boulton and Allen, 2004), whether this be through choice, or in response to the evolution and co-evolution within the business ecosystem, the literatures indicate that the IPO need to embrace creativity and innovation, as a means to facilitate emergent behaviour. It is at this point, that it is not always obvious to managers, what the outputs of the organisation should be, for optimal organisational performance, and therefore control should be replaced by the interaction of all individuals, to come up with solutions to the problem or issue (Solow and Szmerekovsky, 2006). To facilitate this emergent behaviour, the literatures point to an organisation embracing its creative and innovative potential (Mintzberg, 1994 a, b & c; Hamel, 1996), which encourages risk taking, experimentation and innovation, as a means to respond to the dynamic environment (Smith and Taylor, 2000; Cooksey, 2003). The general consensus from the findings indicate that the rules, regulations and IP legislation associated with the IPO (Int 3, 11, 12, 15), as having a negative impediment on creativity (Amabile, 1998), although in contrast pockets of creativity within the IPO were identified in areas such as policy, patents legal,

human resources and innovation (Int 13, 16, 17, 18, 24). The findings indicate that these pockets of creativity were associated with managers delegating and empowering staff, and allowing staff to question existing processes and practices that are not bound by legislation; to come up with new solutions, and make mistakes so long as they were not repeated (Herbig, 1990; Lewin, 1992; Wang and Ahmed, 2003). As such the IPO should consider encouraging managers in other areas, to adopt this approach to management, to facilitate, mentor and empower their teams (Cooksey, 2003). This is in contrast to the operational areas such as patents and trade marks that register IP rights, which are considered to have a target driven approach to management and workload balance (Int 12, 15), which from the findings indicate as restricting the ability of the staff to learn and be creative (Mintzberg, 1994 a, b & c; Amabile, 1998). This may assist in the IPO capitalising on their well communicated 'shared vision' and facilitate the involvement of all in creative problem solving (Senge et al., 1994; McHugh et al., 1998). To facilitate a bottom up approach to decision making (Goldstein, 1999), the IPO will need to ensure that they improve their engagement with staff, particularly at lower levels, to ensure that all have an opportunity to participate in the project teams and change programs. It is also suggested, that the IPO should consider how it embraces the creative minds of their staff, which are currently either made to confirm with the norm of the group, or move on, which is particularly relevant to the IPO, since manager's questioned whether the IPO had sufficient creative and innovative staff to overcome a crisis (Int 17, 24).

## **5.7 Discussion IPO culture**

### **5.7.1 Discussion**

From the pictorial summary provided in the introduction to this chapter, figure 5.12 summarises the relationship between the data theme and the CAS behaviours of self organisation (Kauffman, 1993; Gell-Mann, 1994), and The Learning organisation (Argyris, 1990; Smith and Taylor, 2000).

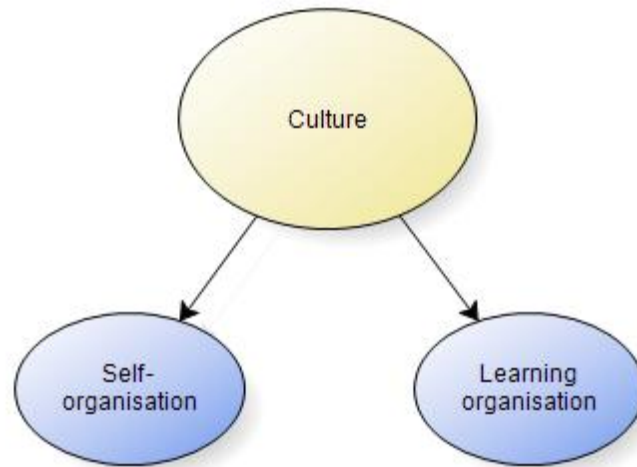


Figure 5.12: Relationship between IPO culture and CAS behaviours

#### 5.7.1.1 Self organisation and learning

The earlier discussion of the IPO communication (section 5.5.1.1), pointed to self organised behaviour (section 2.6.2.3), as the creation of new order or emergent patterns (Stacey, 1993; Gell-Mann, 1994), through the social dynamics of the interaction of individuals of the organisation (Ehin, 2009), which has the capacity to facilitate adaptive seeking and emergent behaviour as a means to respond to changes in the environment (Stacey et al., 2000). In order to facilitate this emergent behaviour, the literatures point to the organisation embracing its creative and innovative potential (Mintzberg, 1994 a,b,c; Hamel, 1996), through its leadership and culture (Solow and Szmerekovsky, 2006). In this respect, an organisation requires a corporate climate that fosters creativity and innovation (Future –Think 2006 Innovation Tracker Survey, 2006), that supports learning, experimentation and risk taking, and have a high tolerance for mistakes, where failure is interpreted as an opportunity to learn (Cooksey, 2003; Ridderstrales, 2003); where past mistakes and experiences are discussed and shared, abandoning the ‘it’s always been done like this’, to one which embraces new approaches (Wang and Ahmed, 2003). As such, the literatures point to manager’s actively encouraging and facilitating experimentation and divergent views (Tentenbaum, 1998), as a means to build high levels of trust, through genuine empowerment and teamwork (Cooksey, 2003). Thereby developing a culture where change is considered the norm (Lewis, 1994; Stacey, 2003), in which

the literatures point to such organisations' as having a clear sense of identity, values, traditions, competencies and core beliefs (Lewis, 1994; Stacey, 2003). Where leaders facilitate emergence, in the course of giving individuals the space to be creative and innovative (Ekvall, 1996); and thus enabling individuals to adapt, learn, evolve, and be creative and innovative, with a shared vision (Senge et al., 1994; Stacey, 2003). As previously indicated in the course of the discussion of IPO communication (section 5.5.1.1), the concept of self organisation is shown in the 'Uncover' quadrant of the complexity strategy matrix which was presented previously in figure 5.10. In the 'uncover' quadrant, the degree of knowledge that the organisation has about the environment is considered uncertain, and the degree of instability in the market place is considered stable (Boulton and Allen, 2004). It is within this quadrant that an organisation is considered as 'uncovering' new products and/or services, as a means to maintain increase or regain competitive advantage, through the exploration of research and pilot schemes (Boulton and Allen, 2004), and as such an organisation may move to the 'uncover' quadrant from either the 'exploit', 'flex' or 'adapt' quadrants, whether this be through choice, or in response to the evolution and co-evolution of the organisation, within its business ecosystem. As previously indicated (section 5.2) the findings indicate that the IPO primarily regard their knowledge of the market place as being known, and the degree of instability in its environment to be relatively predictable and hence positioning the IPO at point 'X' on the matrix (figure 5.10), and within the 'Exploit' quadrant. As such, it may be considered that there is no requirement at this stage for the IPO to be creative or innovative, since the market place is considered to be known and stable (section 5.6.1.1). It is therefore appropriate for the IPO to allow the organisation to be controlled by its senior managers, and hence exploit the optimal path (Boulton and Allen, 2004; Solow and Szmerekovsky, 2006). However should the IPO wish to 'uncover' new products and/or services, whether this would be by choice, or as a response to the evolution and co-evolution of the IPO within its business ecosystem, it is at this point, that the IPO may need to rely on the interaction of all of its individuals, to come up with solutions to the problem or issue (Solow and Szmerekovsky, 2006) through emergent behaviour (Seel, 2003; Mitleton-Kelly, 2003). The general

consensus from the findings, is that the IPO has a culture of change, in light of the continuous change programs the Office undertakes, many of which are undertaken every four years with the recruitment of a new CEO and/or director (Int 2, 7, 20, 24). The findings indicate, that change is not always considered to be effective, with many change programs floundering as a result of poor leadership, over consultation, a lack of buy in by staff, and the failure to complete a change before the initiation of a new change program; although the Office has recently made efforts to speed up the process with project management procedures and the deployment of change managers (Int 3, 10, 16, 20, 24). The IPO stance of top down control through procedures and processes (section 5.4.1.1) arguably stifles its staff, and restricts their freedom to adapt, learn, and evolve, and hence be creative and innovative. This is compounded by a lack of genuine delegation and empowerment across the Office, and reinforces the need for the Office to consider encouraging an environment that allows managers to facilitate, mentor and empower their teams (Cooksey, 2003). Senior managers are encouraged to reflect upon the impact of their target driven approach to management, which are viewed by staff as restricting their ability to learn and be creative (Mintzberg, 1994 a,b,c; Amabile, 1998). This may allow the IPO to exploit its well communicated 'shared vision' as a self referencing tool (Senge et al., 1994; McHugh et al., 1998), and increase the buy in of staff to change. These new approaches with time, will erode the blame culture that is evident within the Office, and increase the commonality across and within the directorates, which the findings indicate as having distinct cultures, mindsets and ways of working (Int 3, 16, 18). Furthermore, an open approach to questioning existing practises, and discussion of past mistakes, will assist in the development and buy in of new approaches (Wang and Ahmed, 2003), and as such the IPO may be able to capture their staffs creative insight, which cannot be readily replicated (Ridderstrale, 2003).

## **5.8 Discussion Complex Adaptive System**

### **5.8.1 Discussion – Relationships of the CAS behaviours**

The earlier sections of this chapter (sections 5.3-5.7) revealed a number of key relationships between the properties and associated behaviours of the complex adaptive system, and as such for this thesis to contribute in a small way to the existing literature, it is appropriate to discuss these relationships and their impact, in the context of the holistic system. In this respect, this is consistent with the work of John Holland, who portrays the complex adaptive system, as a dynamic network of agents acting in parallel, constantly reacting to what other agents are doing, which in turn influences behaviour and the network as a whole (Holland, 1998). Figure 5.13 uses the complexity strategy matrix provided from the literature review conducted in chapter two of this study, to highlight both the relationships that have been established, and the interconnectedness of the system, in which the solid arrows represent the potential movements of the system, and the hashed arrows are the properties and behaviours that facilitate the movement of the system to adapt and respond to changes within the external environment. The starting point in figure 5.13 is considered from the fitness landscape of the system, since this was the starting point for the case study, through the aim and objectives for this research. The fitness landscape is portrayed through the lens of an unstable market place, with the degree of knowledge of the market place being known (Boulton and Allen, 2004). However what is explicit from the strategic context literature of this study, is that the uncertainty that the system faces, may impart be due to the perception and tolerances that managers have to the extent of information they have regarding the environment (Lawrence and Lorsch, 1967; Duncan, 1972; Kreiser and Marino, 2002).



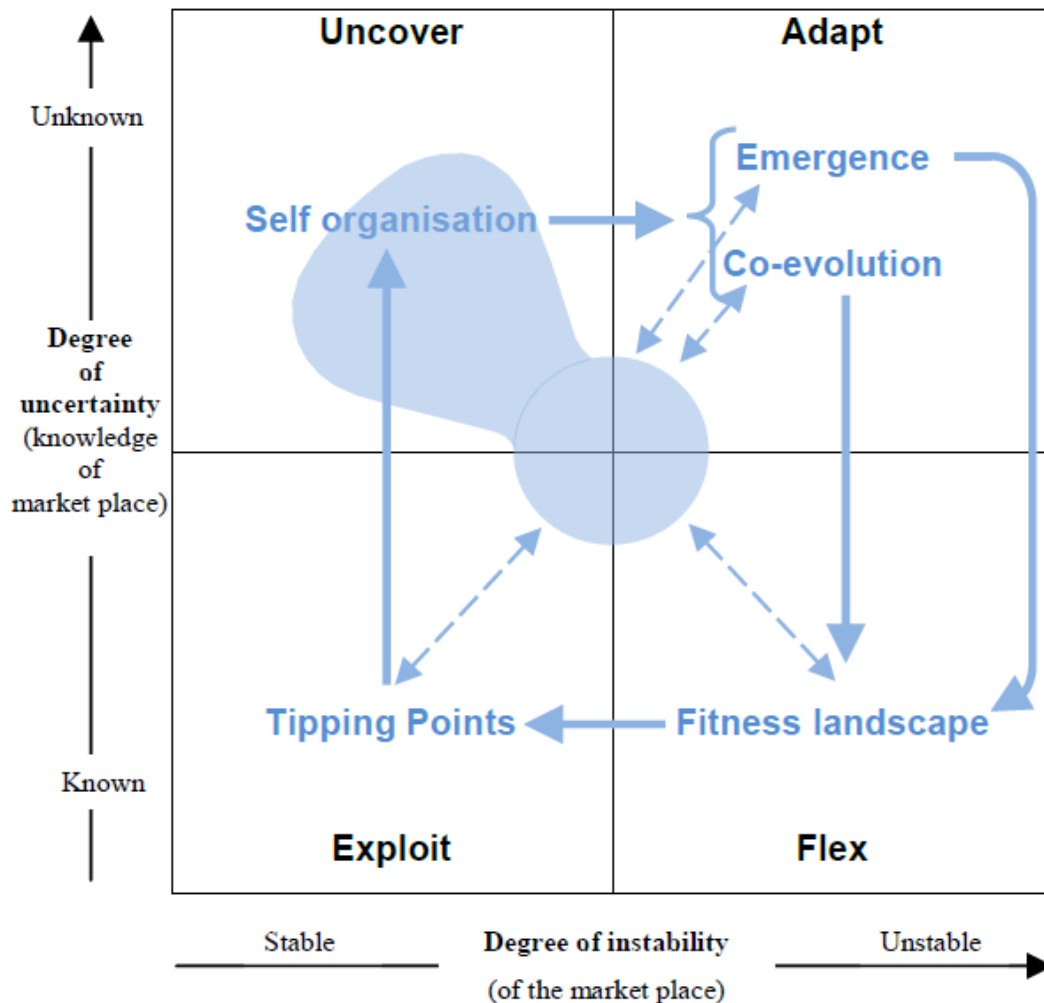


Figure 5.13: Holistic perspective of the CAS (The Complexity Strategy Matrix) (source Boulton and Allen (2004, p. 10))

As such figure 5.13 reflects this uncertainty as a result of the system evolving and co evolving with other living systems (Pagie, 1999), in which the dynamics and interaction are constantly changing in a non linear fashion (Seel, 1999; Stacey, 2000; Mitleton-Kelly, 2003). Accordingly what is explicit from the literature, is that in order for the system to either maintain or regain competitive advantage, and prevent the system experiencing adverse bifurcation points (Prigogine and Stengers, 1984; Kauffmann and Levin, 1987), the ability of the system to learn or unlearn as a means to modify its behaviour to reflect new knowledge and insight, is viewed as an essential element that distinguishes the complex adaptive system from the mechanical system (Smith and Taylor, 2000; Wang and Ahmed, 2003). As such figure

5.13 demonstrates' in a simplified manner, that learning through the self organisation process is what binds all the quadrants and behaviours of the system together in a self referencing manner (Ehin, 2013). The self organisation process, or what is often referred to as the systems 'edge of chaos' (Pascale et al., 2000), results in the creation of new order or emergent patterns (Gell-Mann, 1994). These patterns arise as a result of no central controller, but more fundamental is the creation of emergent patterns through the social dynamics or the agents of the system (Ehin, 2009), as a means to exchange ideas and knowledge, embrace diversity, and embrace creativity as part of the learning process, thereby responding to changes in the environment, as a means to ensure competitive advantage of the system (Stacey et al., 2000). In this respect the self organisation process may be viewed as binding both the formal and informal networks of the system with the systems processes, technology and management structure through the organisational sweet spot (Ehin, 2010), as a means to foster highly localised personal relationships as a means to promote learning, creativity and innovation necessary to facilitate open ended change for the system, and prevent the system from falling into equilibrium. As such it is possible to argue, that the self referencing behaviour of the complex adaptive system, goes to the heart of addressing the literature that argues, that the uncertainty that an organisation faces is the result of a limited network horizon (Lawrence and Lorsch, 1967; Geersbro and Ritter, 2010), which has the potential to have a bounded effect on managers decisions and strategic options (Simon, 1957; March and Simon, 1958; Cyert and March, 1963).

### **5.8.2 Discussion – Holistic organisation**

The complexity strategy model that was established from the literature review (section 2.7.4), has been used to indicate the position of the IPO and to establish the relationships between the behaviours.

However, whilst exploring the behaviours of the IPO by evaluating the relationship between the data themes and associated CAS behaviours, via the complexity strategy matrix, the findings indicate that the IPO does not

follow a single set of behaviours. The findings reveal departments within the IPO having divergent behaviours. In order to analyse and compare these departments, the complexity strategy matrix was used as a comparative measure. Figure 5.14 indicates the positions of the IPO departments that the findings indicate as having differing behaviours, namely the Intellectual Property Office Board (IPOB), Innovation directorate (ID), International Policy unit (IP), Human Resources (HR), Patents Directorate (PD), Trade Marks and Designs (TMD), and Patents Legal (PL).

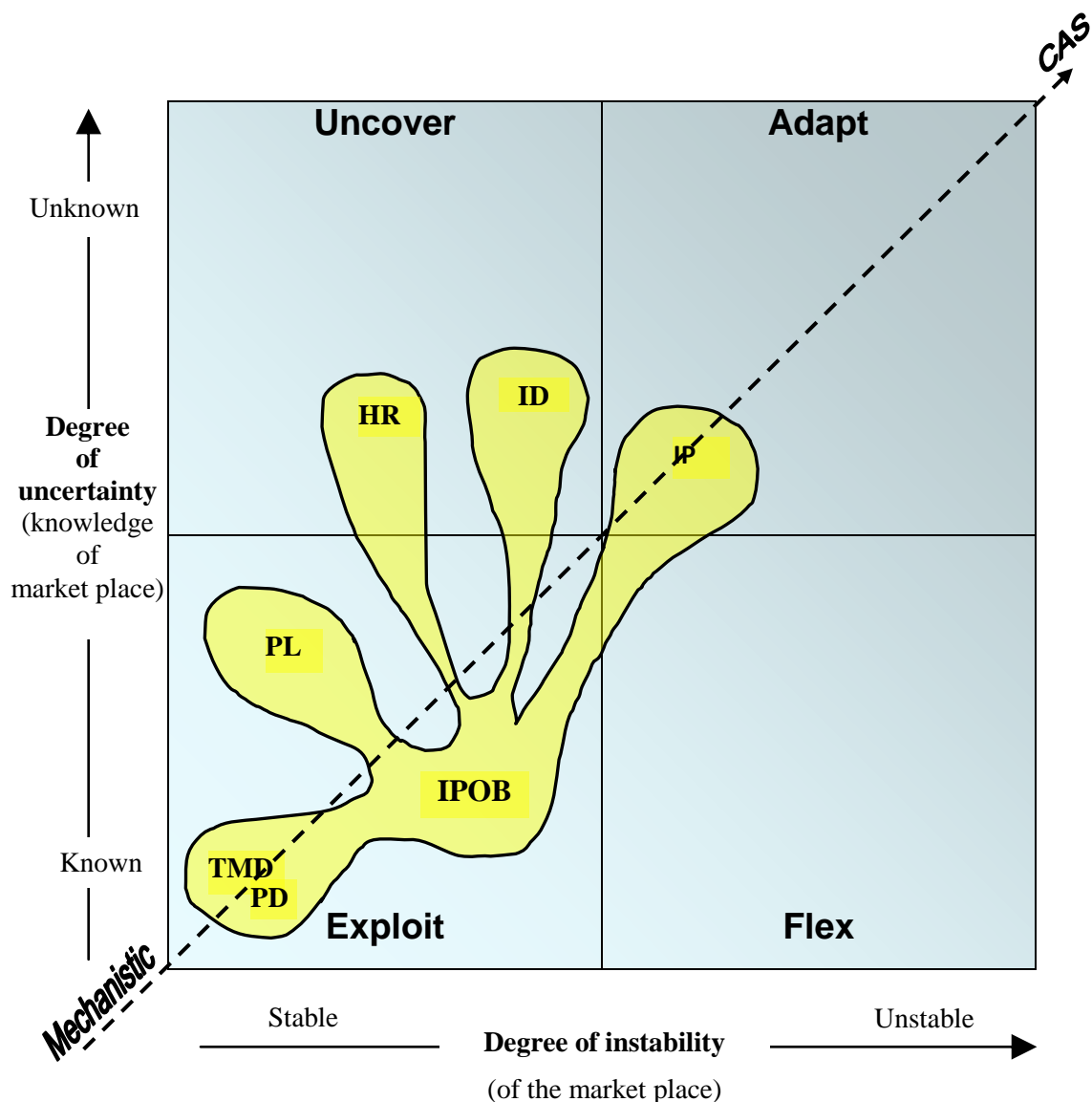


Figure 5.14: The IPO departments and the complexity strategy matrix (source Boulton and Allen (2004, p. 10))

Each department is graphically joined to the overarching department of the IPO, the Intellectual Property Office Board, to allow the IPO as a whole to be graphically represented on the matrix. The graphical representation can be seen as a series of fingers, and it should be noted that the shape of the fingers are not considered to be representing any particular behaviour or characteristic.

With respect to the IPO Board, the findings indicate that the market place from the IPO Board's perspective is generally known, and relatively stable (Int 11, 14, 16, 23, 24). Although it was acknowledged that the environment is changing, it is considered that the IPO will not be affected by any big shocks, and consider that changes in the marketplace will be dampened in light of slow legislation and existing backlogs (Int 8, 11, 14, 17, 20, 24). The IPO Board is associated with being risk averse, and their management surrounds control from the top, planning, budgets and targets (Int 5, 11, 13, 17, 24). In a similar manner to IPO Board, the findings for both Patents Directorate and Trade Mark Directorate grant processing departments indicate that the departments consider their market place as known and stable. Changes in the environment such as a reported increase in demand for Patents Directorate, was not considered to affect the stability of the department, in light of the existing backlogs dampening their affect, and in light of international offices being in a similar position (Int 8, 11, 17, 20, 23, 24). The departments were considered to be target driven, where rules, regulation and procedures dominate (Int 3, 12, 15). The findings also indicate that reported targets and workloads prevented staff from being creative and innovative. In contrast to Patents Directorate grant processing departments, whilst the findings point to Patents Legal considering the market place as being stable, in a similar manner to Patents Directorate, the stability of the marketplace was not considered to be as relatively stable, in light of their role in legislative changes and public consultations. The findings also indicate that although Patents Legal are part of Patents Directorate (in a similar manner to Patents Directorate), and similarly bound by rules and regulations, the management style of the department allowed staff to be creative with regard to how they completed the job, and were allowed to take reasonable risk, so long as

mistakes were not repeated (Int 11, 16). The findings also indicate that Human Resources perceive the marketplace as stable, whilst the knowledge of the market place, in light of recent developments with regard to new services, was less known. The findings also indicate that whilst Human Resources are bound by rules and regulations, the findings show that staff are able to think outside of the box and try new ways of delivering the new services (Int 17). In a similar manner, the findings indicate that Innovation Directorate perceives the marketplace as relatively stable, whilst their knowledge of the marketplace is relatively unknown. This is in light of the department constantly seeking new ways in which to provide International Policy awareness initiatives, to both new and existing stakeholders of the IPO (Int 18). In contrast, the findings indicate that International Policy consider the market place as being more unstable and uncertain in light of the department's role of influencing the IP agenda. As a result International Policy use horizon scanning to keep abreast of political issues (Int 10). The findings also indicate that whilst International Policy is bound by regulations, staff are allowed to be innovative whilst meeting goals, and have control over what they do (Int 10, 22, 24).

The comparative study of the IPO departments using the complexity strategy matrix (figure 5.14) indicates that the IPO does not just sit within the 'exploit' quadrant. The matrix indicates that there are departments, expressed as fingers on the matrix, extending into both the 'uncover' and 'adapt' quadrants. As such, although the complexity strategy matrix provides a simplified approach to identifying a strategy and behaviour for an organisation, in light of its perceived perception of its knowledge and stability of its market place, figure 5.14 indicates that the IPO is more complex in relation to its behaviours, and that the choice of a single regime for the IPO to follow is too simplistic. The matrix indicates that different regimes are relevant to different parts of the IPO dependent upon their knowledge and stability of the marketplace. In addition, the findings indicate that the departments plotted on the matrix depict departments that vary in degrees of mechanistic and emergent behaviours. As such the model may be redrawn to indicate the varying degrees of mechanistic and emergent behaviours of an organisation or

departments within the organisation. The varying degrees of mechanistic and emergent behaviour are depicted as diagonal shading across the matrix, where mechanistic behaviour is more active where the market place is considered to be known and stable, and where emergent behaviour is associated where the market place is considered to be unknown and unstable.

The establishment of the IPO departments positioned within different quadrants of the matrix, and showing various degrees of mechanistic and emergent behaviour, highlighted that the IPO is much more than the sum of its parts. As such, a single strategic approach seemed simplistic in nature, and highlighted the need for a holistic approach to strategy development at the IPO. As such, the complexity strategy matrix provides a holistic view of the IPO and its departments, allowing strategist and/or leader(s) of the IPO to assess not only a department's degree of mechanist or emergent behaviour, but identify regimes that are relevant to individual departments. In addition, in light of the established relationships of the CAS behaviours (section 5.8.1), the IPO may consider different behaviours for not only the IPO as a whole, but for the individual departments within the IPO, and provide a more holistic approach to strategy development at the IPO. The establishment of divergent departments within the IPO from the findings, that have varying degrees of emergent behaviour, may be considered as an invaluable resource to the IPO. Where it may be considered that a department may benefit from adopting a CAS behaviour that is new to them, the department may seek guidance from departments within the IPO and tap into both the implicit and tacit knowledge that they have. This is invaluable since the teaching of CAS point to a system as one in which it ebbs and flows, in response to its ever changing environment. For example, the findings indicate that the patents directorate consider their environment as known and stable, which was reinforced by the lack of impact that the recorded increase in demand (Int 8, 11, 17, 20, 23, 24), and hence positioned within the 'exploit' quadrant. As such, the department is considered mechanistic, and exploiting its environment, which is reflective of the findings that indicate that patent

directorate, is associated with top down control, targets, procedures and processes.

However, in light of the relationship of the CAS behaviours identified in section 5.8.1, Patent Directorates should not just rely on the environment being stable, as, such in light of the uncertainty in the environment and the likelihood of change at some point in time, the CAS behaviours point to the need to be aware of 'tipping points' and to access the 'fitness landscape' for potential new strategies. As such, Patent Directorates may well seek assistance from Policy with respect to horizon scanning (used to keep abreast of political developments), as a means to identify potential tipping points. In addition, should Patent Directorates be tipped, and require creativity from their staff to self organise and emerge. The current staff that are being controlled by managers, targets, procedures and processes, are liable to be limited. In this respect, Patent Directorates may wish to learn from Patent Legal and International Policy, who have some degree in freedom in how they do their jobs, whilst having degrees of restriction in light of rules and regulations. In light of the benefits of learning from each other, and the diversity of experience with regard to divergent behaviours that may assist each other, the IPO are encouraged to improve the connectivity not only within the IPO, to allow experiences to be shared, but also outside the IPO to allow changes in the environment to be scanned and communicated to all relevant departments.

## **5.9 Chapter summary**

This chapter has discussed the findings which were previously presented (chapter four), in relation to the detailed literature review provided in chapter two of this study. To explore the behaviours of the IPO, the established data themes and their relationship with the CAS behaviours have been discussed with the aid of the complexity strategy matrix. This has resulted in a number of relationships between the CAS concepts and also demonstrates that learning through the self organisation process is what binds the behaviours of the system together in a self referencing manner. In addition the discussions

also indicate that the IPO does not follow a single set of behaviours and as such reveal departments within the IPO having divergent behaviours, or what is described as degrees of mechanistic and emergent behaviour. As a result it is possible to refine the complexity strategy matrix that depicts these degrees of mechanistic and emergent behaviour. The next chapter concludes the thesis, by offering overall conclusions of the study, and provides recommendations for future research.



## **6.0 Conclusions and Recommendations**

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### **6.1 Introduction**

This chapter concludes the study and therefore it is appropriate for the researcher to reflect upon the extent that the research aim and objectives have been answered. This chapter also discusses the originality, and contribution to knowledge and practice, the limitations and boundaries of the study, and the directions for future research.

### **6.2 Reflection on aim and objectives**

The aim of the study is “To explore the holistic behaviour of the UK Intellectual Property Office using the Complex Adaptive System paradigm”.

The two objectives of this study are:

1. To identify an appropriate approach for exploring the Complex Adaptive System behaviours within the UK Intellectual Property Office.
2. To discern the presence of mechanistic and emergent behaviours within the UK Intellectual Property Office.

In order to achieve the aim and objectives the researcher carried out a literature review, to develop a thorough understanding of both the mechanistic and emergent behaviours. The findings of the study are the result of the primary semi structured interviews conducted and the secondary documentary and survey archival data. To determine the extent that the aim and objectives have been achieved, the researcher will answer each of the objectives in turn. Therefore by relying on the literature review (chapter two) as well as the study findings (chapter four), if the researcher is able to demonstrate that the objectives have been achieved, then it follows that the aim of this study has been achieved.

As such the first objective is to identify an appropriate approach for exploring Complex Adaptive System behaviours within the UK Intellectual Property Office. To explore the behaviours of the IPO the researcher used the established findings data themes and analysed their relationships with the CAS behaviours through the complexity strategy matrix (Figure 6.1). This model is selected from a number of models critiqued during the literature review (section 2.7), since it demonstrates in a simplified manner the different behaviours of the complex adaptive system in response to degrees of uncertainty in the environment. In comparison with other approaches to strategy development contingent on the environment, it is possible to argue that this model demonstrates consistencies with the models presented by Duncan (1972) and Burton and Obel (1998). Although the complexity strategy matrix may be considered as providing a simplistic view of living system behaviours, it does demonstrate that the degree of complexity in the system is what underpins the propensity for instability and uncertainty, in which complexity is viewed as a dependent variable which drives propensity for changes. In this respect the matrix is useful for communicating key concepts from the complex adaptive lens such as self organisation, emergence, fitness landscape, tipping points, co-evolution and the learning organisation, which is representative of the focus of this research.

The study also provided further substantive evidence of studies which have also used Boulton and Allen (2004) matrix and framework. Bessant et al. (2005) adopt the matrix to simply represent an organisation's environment. In this respect the quadrants of the matrix represent innovation processes/strategies, in light of the organisation's degree of knowledge and perceived uncertainty of its environment. Bessant et al. (2005) argue that existing innovation management processes associated with best practice and depicted as 'steady state' strategies, are not suitable when elements of discontinuity come into the equation. In this respect the emphasis is placed on the organisation having an open ended and agile approach to managing an emergent field, in which strategies are difficult to predict in advance (Bessant et al., 2005). Tidd and Bessant (2009) also adopt Boulton and Allen (2004) matrix, as a means to map the 'innovation selection space'. As such

the variables of the matrix are changed, to show innovation strategies that management may adopt in response to the degree of novelty of innovation (incremental/radical) on the vertical axis, to the degree of complexity of the environment on the horizontal axis. As such, when the degree of complexity increases, Tidd and Bessant (2009) argue, that it becomes more difficult to predict the path that the innovation should follow. Furthermore, Allen et al. (2005) have also used the simplistic two by two matrix to express their understanding of complexity through the 'situation matrix'. This has been used to develop an 'activity matrix' for the complex system (Allen et al., 2005). As such, each quadrant depicts a different business process of the complex systems relationship with its environment, both in terms of the short and long term, and the closed and open nature of the environmental dimensions. In this respect, the quadrants of the 'activity matrix' describe the 'evolution' of a complex system through four aspects, namely production, contingency, sense-making and management (Allen et al., 2005). Therefore based on the evidence, the study has identified an appropriate approach for exploring the complex adaptive system behaviours within the UK Intellectual Property Office, objective one is achieved.

The second objective is to discern the presence of mechanistic and emergent behaviours within the UK Intellectual Property Office. The findings indicate that the IPO have an abundance of mechanistic behaviours and as such is positioned at point X (figure 6.1).



imposed by the rules, regulations, targets and a risk averse culture are barriers to creativity and innovation. Further barriers to fostering a creative and innovative environment is also apparent through the 'silo' behaviour and restricted communication channels, which is synonymous with the minimal delegation and empowerment. As such the findings established the presence of mechanistic behaviours.

The findings also indicate that there are departments within the IPO that show divergent behaviours to the holistic position of the IPO (figure 6.1). To substantiate this position these emergent behaviours have been previously discussed in detail (section 5.8.2). The findings indicate that the IPO have departments that exhibit emergent behaviours. For example there are departments in which the managers did not rigidly bind their teams to the rules and regulations that are associated with the IPO. This was particularly evident in the Patents Legal (PL) department. Whilst this department is part of the mechanistic Patent directorate (PD) which is bound by rules and regulations, and firmly entrenched in the 'exploit' quadrant. The findings indicate that whilst Patents Legal was bound by rules and regulations, the management style of the department is such, that it allows staff to be creative, with respect to how they complete tasks, and as such are allowed to take reasonable risk providing mistakes are not repeated.

In contrast to the holistic position of the IPO that views the environment as primarily stable and known, the findings indicate that this was not a position for all departments of the IPO. The International Policy (IP) department view their environment as being more unstable and unknown, in light of the department interacting with numerous IP stakeholders in its role of influencing the IP Agenda. The findings indicate that the department exhibits emergent behaviour through the departments active use of horizon scanning as a critical means of keeping abreast of political issues and developments in Europe, to facilitate their role, which surrounds the influencing of the IP Agenda, and hence IP legislation. The findings also indicate that whilst the International Policy department is bound by legislation and regulations, the staff in International Policy, are allowed to be innovative whilst meeting goals, and

have control over what they do. As such the findings have discerned the presence of mechanistic and emergent behaviours within the UK Intellectual Property Office and therefore objective two is achieved.

As a result of achieving the aim and objectives of the study, and establishing that the IPO consist of departments whose behaviours diverge from the overarching behaviour of the IPO, it is possible to graphically represent not only the holistic IPO on the complexity matrix (figure 6.1) but the component parts of the IPO (figure 6.2). In this respect the components are the departments of the IPO that are represented as a 'series of fingers' on the matrix. Consequently the IPO does not just sit in the 'exploit' quadrant as indicated through commentator Boulton and Allen (2004). The matrix actually indicates that the departments extend into the 'uncover' and the 'adapt' quadrants, and therefore it is possible to argue that the IPO is more complex than that previously portrayed in the complexity strategy matrix (figure 6.1). As such based on the findings of this study, the IPO is not best represented as either exhibiting mechanistic or emergent behaviour, but would be more appropriately represented as containing areas that show various degrees of both mechanistic and emergent behaviour.

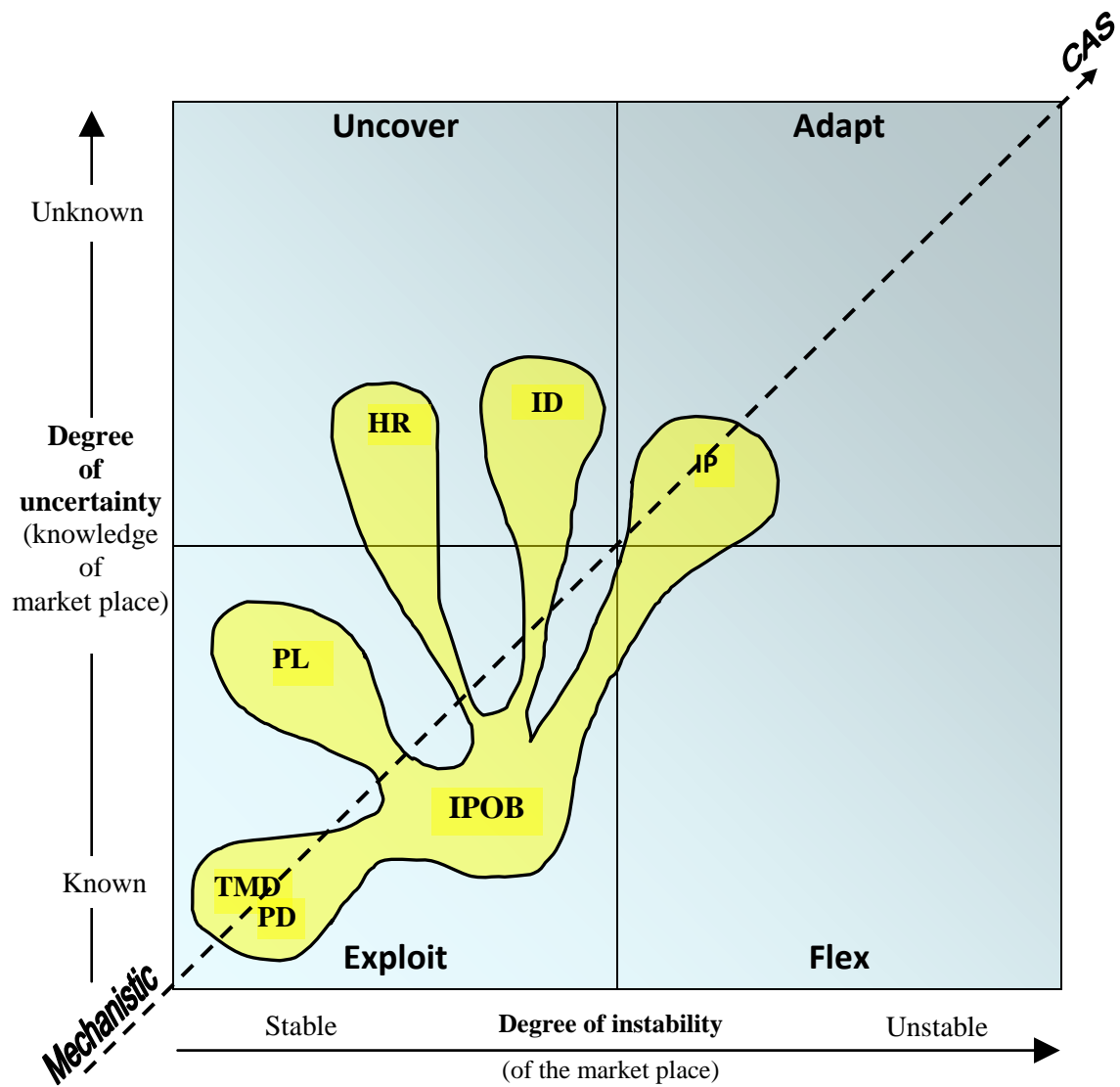


Figure 6.2: The IPO departments and the complexity strategy matrix (source Boulton and Allen (2004, p. 10))

A further consequence of the study is the establishment of a number of relationships between the CAS concepts as a result of comparing the data themes and CAS behaviours through the complex adaptive strategy matrix (section 5.8.1).

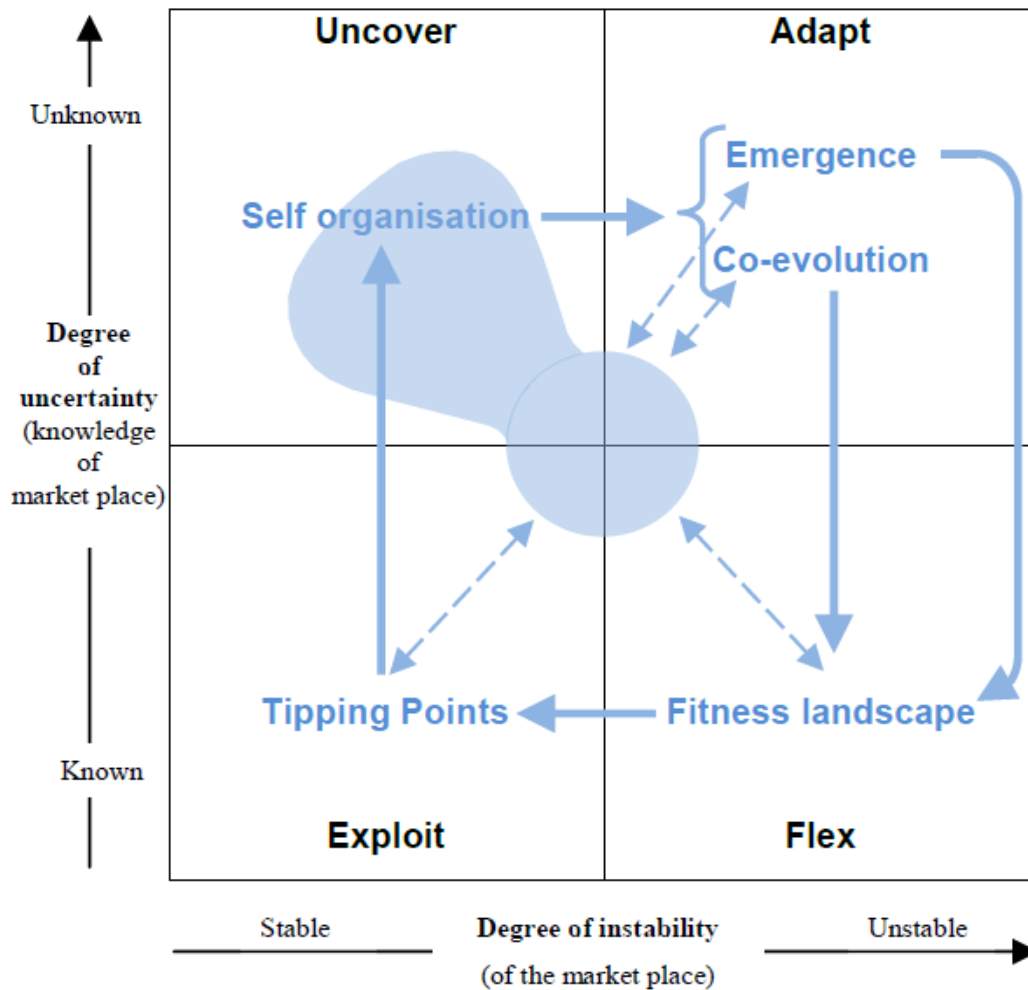


Figure 6.3: Holistic perspective of the CAS (The complexity strategy matrix) (source Boulton and Allen (2004, p. 10))

As shown in figure 6.3, the study highlights a number of relationships and interconnectedness of the system, in which the solid arrows represent the potential movement of the system, and the hashed arrows are the properties and behaviours that facilitate the movement of the system, to adapt and respond to changes within the external environment. In which the uncertainty in the environment is the result of the system evolving and co evolving with other living systems (Pagie, 1999). As such in order for the system to either maintain or regain competitive advantage, and prevent the system from ‘tipping’ into some undesirable state (Gladwell, 2000), the ability of the system to learn or unlearn as a means to modify its behaviour in response to the uncertainty is viewed as a fundamental behaviour (Smith and Taylor, 2000;



Wang and Ahmed, 2003). As such figure 6.3 serves to demonstrate, that learning (shaded area) whilst predominately facilitating the self organisation process, it is relevant to all of the regimes depicted on the matrix, and as such may be considered as binding all the quadrants and behaviours of the system together, in a self referencing manner (Ehin, 2013). Thus this self organisation process, or referred to as when the system is at the 'edge of chaos' (Pascale et al., 2000), results in the creation of new order or emergent patterns (Gell-Mann, 1994). These patterns arise as a result of no central controller, but more fundamental is the creation of emergent patterns through the social dynamics or the agents of the system (Ehin, 2009). As such the behaviour of the complex system acts as a means to exchange ideas and knowledge, embrace diversity, and creativity as part of the learning process, and thereby respond to changes in the environment (Stacey et al., 2000).

## 6.3 Key findings and recommendations

A summary of the key findings and recommendations are shown in tables 6.1 and 6.2 respectively.

Table 6.1: IPO environment and decision making: key findings and recommendations

|                     | Key findings  | Recommendations   |
|---------------------|---|---|
| IPO environment     | <ul style="list-style-type: none"> <li>• Emphasis placed on predicting the environment, and internal systems designed around stability within the environment.</li> <li>• Any failure in achieving desired outcome or targets is considered failure of analysis, data capture or execution.</li> <li>• There are pockets within the IPO which display more outward looking behaviour with the notion that the environment can and will change at some point.</li> </ul> | <ul style="list-style-type: none"> <li>• The IPO should not place as much emphasis on predicting the environment, since the complex and unpredictable nature of the environment makes prediction difficult.</li> <li>• More emphasis should be placed on scanning the horizon for potential tipping points.</li> <li>• Co evolution with other national offices in the short term should not be at the expense of reducing the competitive advantage for the IPO in the longer term.</li> </ul> |
| IPO decision making | <ul style="list-style-type: none"> <li>• Emphasis placed on “control” from the top of the organisation through the hierarchical command and control structure</li> <li>• Emphasis placed on planning and forecasting the environment, and fitting internal structures to meet those plans.</li> <li>• IPO board making the majority of decisions, which results in slow decision making, based on processes and targets.</li> </ul>                                     | <ul style="list-style-type: none"> <li>• Emphasis to be placed more on a bottom up approach to solutions, in which the senior managers facilitate the environment for this.</li> <li>• Emphasis to be placed on adapting to change in the environment compared to long term planning.</li> <li>• Emphasis on decisions made by the staff at lower levels, as a means to speed up the decision making process</li> </ul>   |

Table 6.2: IPO communication; creativity, innovation and risk; and culture: key findings and recommendations

|  | Key findings   | Recommendations   |
|--|--|---|
| <b>IPO Communication</b>                   | <p>Restrictions on the rate of communication flow were found to be through:</p> <ul style="list-style-type: none"> <li>• the existence of silos between and within directorates;</li> <li>• which is part and facilitated by a noticeable barrier and communication blockage at middle management;</li> <li>• The adherence to formal mechanisms and insufficient use of informal mechanisms and network</li> <li>• Primary communication hub in the Intranet is considered inadequate for succinct information flow.</li> </ul> | <ul style="list-style-type: none"> <li>• Greater emphasis to be placed on the connectivity between the directorates and departments</li> <li>• This emphasis on connectivity should involve a review of the middle management tier</li> <li>• Emphasis to be placed on the informal network compared to the present formal structure as a means to communicating effectively</li> <li>• Emphasis to be placed on self organised teams as a means of communicating and learning</li> </ul> |
| <b>IPO Creativity, Innovation and Risk</b> | <p>Barriers to creativity and innovation through:</p> <ul style="list-style-type: none"> <li>• Rules regulations procedures and processes and lack of empowerment</li> <li>• Risk averse</li> <li>• Workload and targets</li> <li>• Ideas from the staff suggestion scheme met with resistance</li> </ul>  | <ul style="list-style-type: none"> <li>• Self organised teams given the freedom to work within boundaries</li> <li>• Teams and individuals should be allowed to make mistakes</li> <li>• Need to review what would appear to be the excessive use of targets</li> <li>• Need to allow “new ideas” to flourish.</li> </ul>   |
| <b>IPO culture</b>                         | <ul style="list-style-type: none"> <li>• Tension between the different levels of the organisation</li> <li>• Tension between different ways of working across the office</li> <li>• Tension with amount of “targets”</li> <li>• Resistance /difficulty to change</li> <li>• Cosy supportive family culture</li> </ul>  | <ul style="list-style-type: none"> <li>• Culture that needs to accept change as the norm, by cross directorate change teams</li> <li>• Build upon synergies across the office</li> <li>• Embrace learning as part of the change process</li> <li>• Reflect upon the value of target mentality, and the impact on the organisation</li> </ul>  |

### 6.3.1 Time line for recommendations

To facilitate the development of complex adaptive system theory for the Intellectual Property Office the researcher suggests the following initiatives in the short, medium and long term. The method of timelines depicted in figure 6.4, has been selected to demonstrate the overlapping relationships between the recommendations previously shown in tables 6.1 and 6.2 respectively, to emphasise the growth or gradation towards the complex adaptive system paradigm.

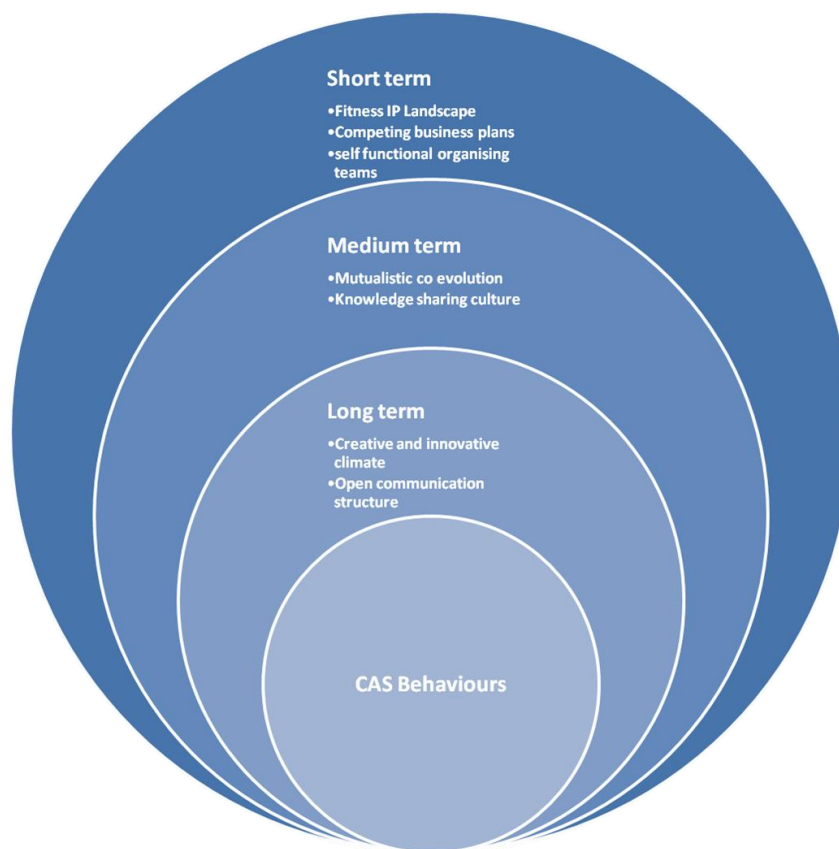


Figure 6.4: Short, medium and long term recommendations

## 6.4 Originality and major contributions to knowledge

In assessing the contribution that this research has made, the thesis has identified with reference to various parts of this chapter, originality both in terms of knowledge and practice. Marsden (1992, p. 38) portrays originality and contribution to knowledge as:

*“uncover[ing] new facts or principles, suggest relationships that were previously unrecognized, challenge existing truths or assumptions, afford new insights into little-understood phenomena, or suggest new interpretations of known facts that can alter man’s perception of the world around him” (Marsden, 1992, p. 38).*

As discussed in the theoretical framework for this study (section 2.2) previous studies have used complex adaptive system theory to investigate different aspects of the Intellectual Property system. In contrast this study through the aim and objectives has focused on the behaviour of the UK IP granting organisation as a complex adaptive system. As such figure 6.5 identifies that this research has shown and accepts, that there is a knowledge gap that exists between the IP literature and the literature available for complex adaptive systems.

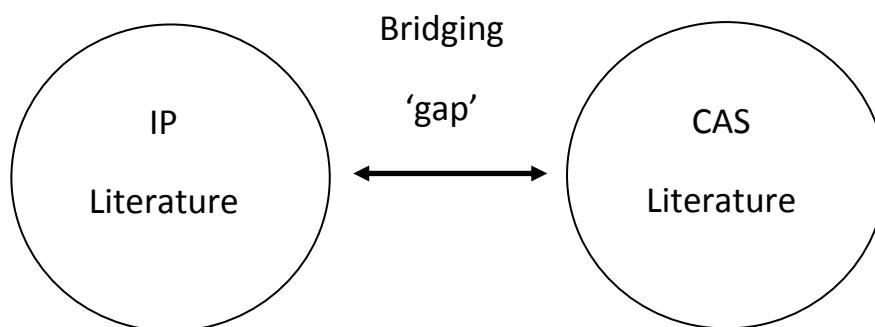


Figure 6.5: Knowledge gap

#### 6.4.1 Contribution to knowledge

As a result of this study the contribution to knowledge is as follows:

1. As indicated in the earlier discussion on the holistic behaviour of the organisation (section 5.8.2), the IPO Board, Patents Legal, Patents directorate and Trade Marks and Designs directorate showed behaviour associated with the overarching holistic behaviour of the IPO. This behaviour is closely aligned to the behaviours associated with the 'exploit' quadrant and that of the mechanical system. However, in contrast, departments such as Human Resources, Innovation Directorate and International Policy unit, showed behaviours associated with the 'uncover' and 'adaptable' quadrants, that are more closely aligned to the characteristics associated with that of the complex adaptive system. As

such, organisations' are not merely mechanistic or complex adaptive systems as portrayed by the complexity strategy matrix shown in figure 6.6 (Boulton and Allen, 2004). The findings indicate that organisations consist of a multitude of departments whose behaviours do not necessarily follow the overarching holistic behaviour of the organisation.

2. The complexity strategy matrix has been refined as shown in figure 6.7, to represent the various degrees of mechanistic and emergent behaviours that can exist within an organisation. These degrees of mechanistic and emergent behaviour are depicted as diagonal shading across the matrix. As such the refined complexity strategy matrix demonstrates that there are very few (if any) organisations' that can claim to have totally mechanistic or emergent behaviour.

In summary the refined complexity strategy model (figure 6.7), contributes to knowledge, and specifically to the approaches of strategy development contingent on the environment, by adding to the work of Boulton and Allen (2004).

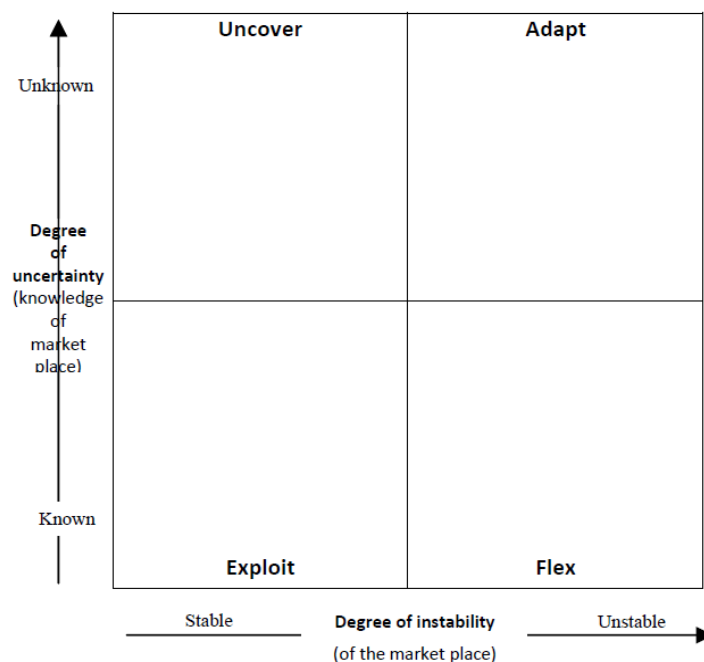


Figure 6.6 The complexity strategy matrix (source Boulton and Allen (2004, p. 10))

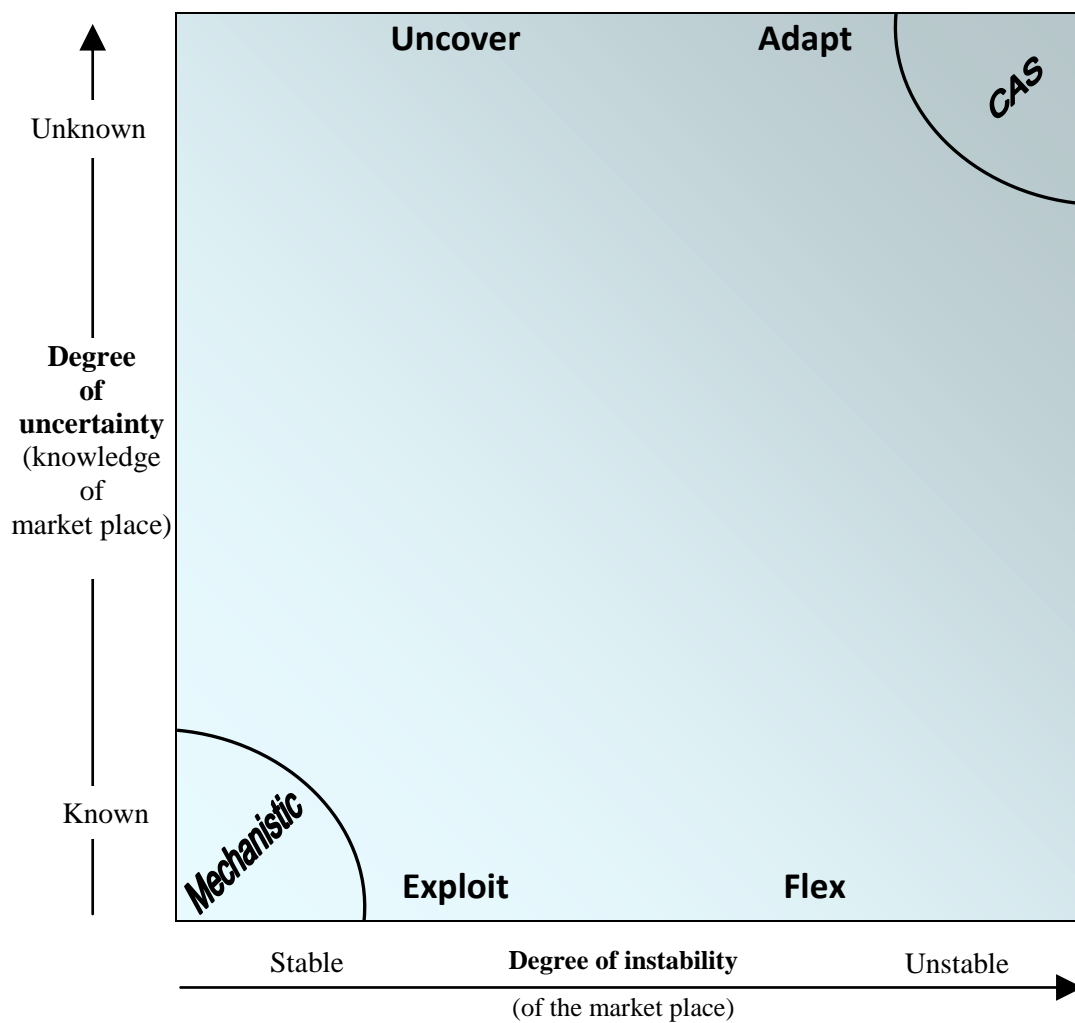


Figure 6.7: The refined complexity strategy matrix

#### 6.4.2 Contribution to practice

As a result of this study the contribution to practice is as follows:

1. From the review of studies of CAS and the IP system (section 2.2), there is minimal research linking IP with the complex adaptive system paradigm. The current areas surround Property Rights (Harper, 2014); Intellectual Copyright System (Tussey, 2013); Innovation Systems (Cooke, 2012); Pricing of copyrighted information goods (Khouja et al., 2008); Strategic legal and business behaviour as a form of regulation (Matwyshyn, 2006); Innovation (Tilebein, 2006); Technology as a complex adaptive system: evidence from patent data (Fleming and Sorenson,

2001); and Managing distributed innovation in turbulent markets (Sawhney and Prandelli, 2000). In contrast to these earlier studies, this current study has focused on exploring the holistic behaviour of the UK Intellectual Property Office using the complex adaptive system paradigm. As such the findings indicate that the complex adaptive system behaviours are applicable for the Intellectual Property Office, and hence the Intellectual Property world.

2. The study identifies the existence and some adoption of the CAS behaviours within the IPO. Furthermore the findings indicate that the integration of complex adaptive system thinking into the IPO's everyday business will assist the IPO in responding to changes in their environment. As such the study encourages managers and leaders of the IPO to acknowledge that their environment will change at some point, as a result of the interactions and connectivity of the IPO with other organisations within the business ecosystem. To reduce the impact of change from the external environment, the study endorses managers and leaders proactively scanning the horizon, to identify potential tipping points and new strategies, as a means to develop emergent strategies through self organisation (figure 5.13). As such managers and leaders are encouraged to embrace diversity, learning, creativity and connectivity both internally and externally, to facilitate the organisation's ability to ebb and flow, in response to its changing environment.

In summary, the practical knowledge obtained as a result of this study, has broadened the practice of complex adaptive system studies, and identifies complex adaptive system behaviour within the IPO (figure 6.8).



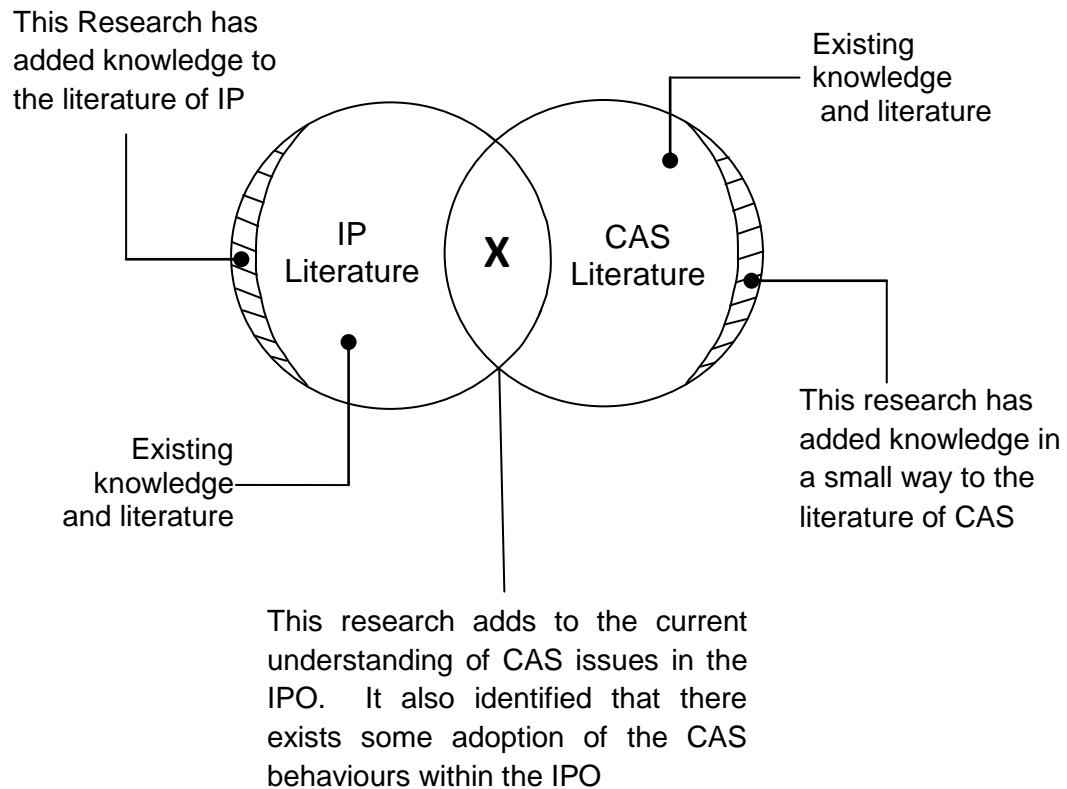


Figure 6.8 Demonstrating the contribution to knowledge and bridging the GAP between CAS literature and IP

## 6.5 Limitations / boundaries and future research

As previously identified all research is considered to have limitations and boundaries and as such this research acknowledges this position, and identifies future research opportunities as a result of this study.

### 6.5.1 Limitations / boundaries of the research

This research is limited to a single cross sectional holistic case study, as the selected research strategy (sections 3.4 - 3.6), and therefore a limitation of the study, may be considered through the time horizon of the research. Therefore further research could use multiple case studies within the Intellectual Property world, which might add a new dimension to study, where knowledge could be attained from different experiences, and enhance the generalisability of the findings.

The study may also be considered limited in terms of the semi structured interviews conducted. As such although the semi structured interviews enable the researcher to explore the phenomena in question, a questionnaire in addition to the semi structured interviews may have increased the studies validity. Further, the study may also be considered limited in terms of the research population, in the sense that there is potential improvement to the research process (at the level of the qualitative approach) if targeted interview groups are extended. For example, groups could include members from the Intellectual Property Office steering board, Business Innovation and Skills ministers (BIS), Intellectual Property pundit's, general public committees responsible for Intellectual Property, and the private sector who may be interested in the complex adaptive system paradigm, and the potential impact this may have on both, the Intellectual Property Office, and the Intellectual Property world.

This study has shown that the complex adaptive system paradigm is a debatable issue; the data collection could be improved by using a focus group method. This method of interviewing involves more than one, usually at least four participants (Bryman, 2012). Researchers using this method are interested in such things as how people respond to each other's views, and build up a view from the interaction that takes place within the group. More broadly, when the semi structured interviews were conducted, the researcher may have given out unconscious signals / and or clues, that may have guided the participants to give answers expected by the researcher (Miles and Huberman, 1994). The researcher argues that this was avoided as much as possible, by the researcher keeping himself neutral, and allowing the participants the freedom to answer the questions from their perspective (Saunders et al., 2007). To negate any subjectivity issues, immediately after each interview the researcher reserved time to write all pieces of information, and ideas while they were still easy to remember. Furthermore because the researcher has previously worked at the Intellectual Property Office, the investigation may be overly or unduly influenced by the subjective views of the researcher (Yin, 2003), however in defence any potential bias on behalf of the researcher, has been considerably reduced because of the structured

methodology adopted, through the use of the research 'onion' (figure 3.1). The researcher has also made use of triangulation, in which data has been taken from different sources, as a means to provide reliable inferences from the data; although as indicated, triangulation is not able to fully guarantee the reliability of the inferences, which have been drawn from the data (Jack and Raturi, 2006).

### **6.5.2 Directions for further research**

From this research, it could be argued that there is a need for a Intellectual Property (IP) system, that is able to adapt and respond to the changes in the environment, in a sector that is of increasing importance to the UK economy. Further research could be undertaken to expand the findings from this research, and thereby provide insight into the complex adaptive system paradigm issues in Intellectual Property. Therefore this research identifies sufficient opportunity for future research, on issues generated by the research itself such as:

1. This research offers a snapshot of people's perception at a particular moment in time, and therefore replication of the research in the Intellectual Property Office (IPO) over a longer period of time, would build significantly on the findings.
2. A replication of this research in other national IP offices such as the United States Intellectual Property Office (USIPO), as well as the European Patent Office (EPO), and The Office of Harmonization and Internal Market (OHIM). This would prove helpful in confirming the validity of this study's findings.
3. The generic strategies that form the model for this research are associated with broad regimes that can assist managers in choosing the appropriate management approach and behaviour in light of their perceived knowledge and uncertainty of the marketplace. However it may be possible to break these regimes down further, and establish further sub

groups associated with more specific strategies that might assist management more specifically.

4. It would be useful to conduct further studies for the Complex Adaptive System paradigm in Intellectual Property, because this sector could be considered as a key influencer of growth in the UK economy, and a provider of creativity and innovation in Small Medium Enterprise's (SME's).
5. This research could present a fundamental background, for researchers interested in investigating a broadly mechanistic organisation through the complex adaptive system paradigm.
6. Other researchers studying complex adaptive system theory in different sectors could adopt or modify the complexity strategy model presented in chapter 2, to their area of study. Consequently, the same or very similar research methodology used by this research, could guide their study.

## **6.6 Summary**

The aim of this study is "To explore the holistic behaviour of the UK Intellectual Property Office using the Complex Adaptive System paradigm".

The Government department concerned is that of the UK Intellectual Property Office (IPO) an executive agency of the Department for Business Innovation and Skills (BIS). The IPO is the administrative granting authority for the UK and is responsible for the UK's Intellectual Property (IP) framework.

The two objectives of the study are:

1. To identify an appropriate approach for exploring the Complex Adaptive System behaviours within the UK Intellectual Property Office.

2. To discern the presence of mechanistic and emergent behaviours within the UK Intellectual Property Office.

By relying on the literature review and the findings for the study, the aim and objectives of this study has been achieved. As a result, the study has made a contribution to both knowledge and practice, identified the limitations and boundaries of the study, and recognised directions for future research.

Consequently as a result of achieving the aim and objectives of this research, a number of questions have been answered. The findings of the study indicate that the IPO is not best represented as exhibiting solely mechanistic or emergent behaviour. Since the IPO consisted of departments whose behaviours diverge from the overarching behaviour of the IPO. As such the findings point to the component parts, for example the IPO departments showing various degrees of both mechanistic and emergent behaviour which are represented graphically as a 'series of fingers' on the complexity strategy matrix (figure 6.2), which extend into different quadrants. As a consequence of the findings, organisations' are not merely mechanistic or complex adaptive systems as portrayed by figure 6.6 (Boulton and Allen, 2004). Organisations' consist of a multitude of departments whose behaviours do not necessarily follow the overarching holistic behaviour of the organisation. As such the complexity strategy matrix has been refined as shown in figure 6.9, to represent the various degrees of mechanistic and emergent behaviours that can exist within an organisation. These 'degrees' are depicted through the shading from the 'mechanistic' to the 'emergent' behaviour. Consequently the refined complexity strategy matrix demonstrates that there are very few (if any) organisations' that can claim they are either totally mechanistic or totally emergent. As such managers and leaders of organisations' need to recognise the complex nature and divergent behaviours that may exist within different parts of their organisation, as a means to assist the organisation to change and respond to the environment. Therefore the refined model (figure 6.7), contributes to knowledge, and specifically to the approaches to strategy development contingent on the environment, by adding to the work of Boulton and Allen (2004). The study also adds to the broad CAS literature, since

previous studies have focused on different aspects of the Intellectual property system, in contrast to this studies focus which is the behaviour of the UK IP granting organisation as a complex adaptive system. The findings of this study indicate that the IPO is not in one particular quadrant, but in a number of quadrants and where the connectivity between the various parts of the organisation is by means of the agents and their relationships (figure 6.2). As a result of this research, future research can focus on a number of organisations', to establish the range of mechanistic and emergent behaviour, with the aim of understanding the drivers for the established behaviour. This scenario would appear applicable for the IP community, to identify what differences if any exist, and if so, are there any benefits that the IP community can use as a means to respond to the environment.

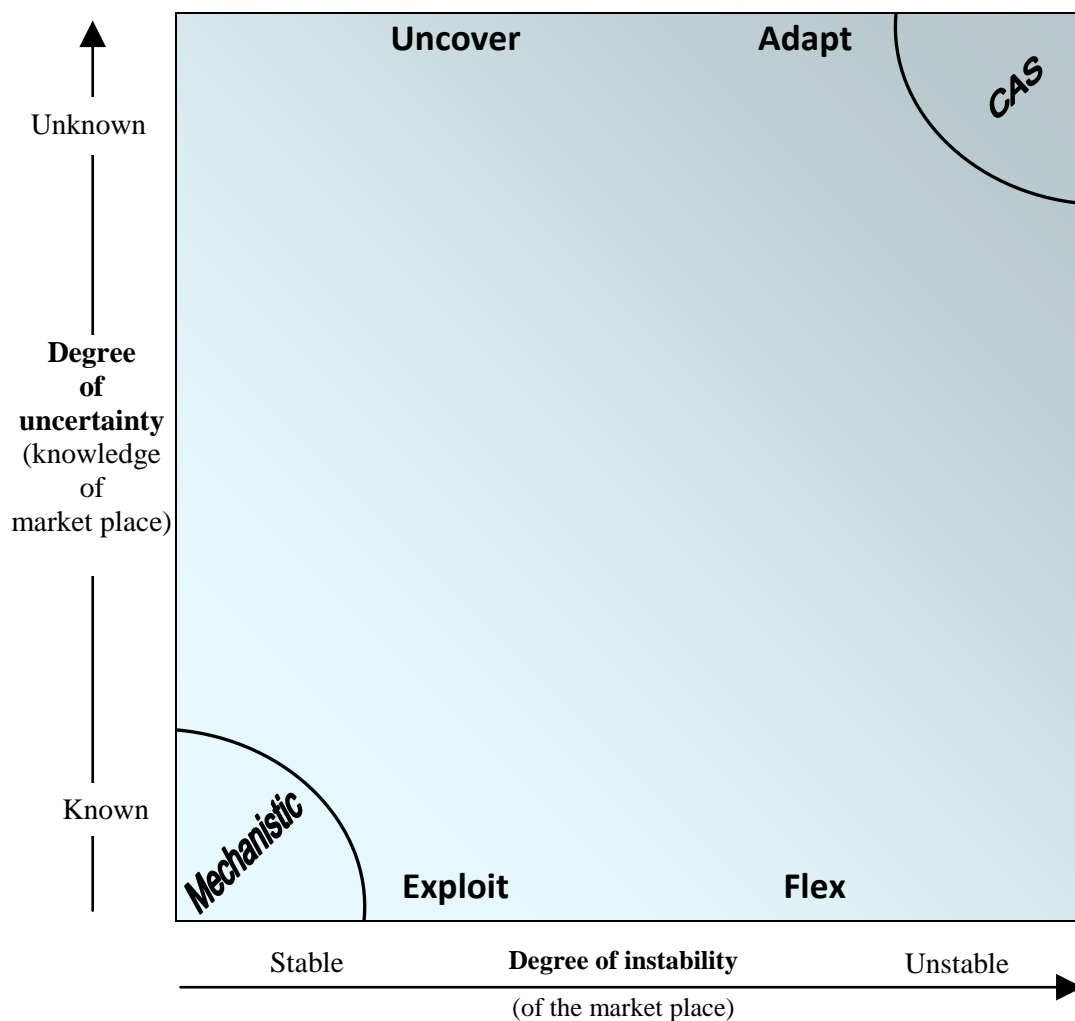


Figure 6.9: The refined complexity strategy matrix

Finally, as previously acknowledged all research is considered to have limitations, and as such even if performed well will leave scope for future work. This research has attempted to minimise the limitations by making considerable efforts in both the data collection, and analysis stages to obtain reliable and valid results. It is therefore hoped, that these results will contribute to the fruitful development of knowledge, both in terms of theory construction and practice.

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## Appendices

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## **Appendix 1:**

### **Semi-structured interview protocol and guide**

#### **Opening Remarks:**

- Explain purpose of research
- Ensure confidentiality of information
- Ensure comfortable with location

#### **General Introduction Questions:**

- Name
- Job Title
- Role within the IPO
- E-Mail
- Telephone

#### **Interview Questions:**

- Refer to list of questions
- If manager or strategic management role see additional set of questions

#### **Closing Remarks:**

- Explain next steps of the research
- Thank for their time and support

## Appendix 2:

### A sample of interview transcript

The following is a transcript interview with a staff member of the Intellectual Property Office.

Interview Number: 3

Interviewer: The researcher

Interviewee Position (Respondent): B grade in Trade Mark Directorate

Date: 9<sup>th</sup> April, 2012

Length of interview: 35 Minutes

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| Interviewer | In your role who do you consider are your stakeholders ?  |
| Respondent  | <i>I have a team of examiners who obviously deal with professional practitioners of trade mark law who are obviously are our main stakeholders, we also have a wide constituency of private applicants, that are unrepresented applicants filing for trademarks they are also our key stakeholders. Personally I have both professional practitioners and the private applicants, but my stakeholders are also my staff. So if I fail to engage with them sufficiently, then they will suffer from decisions that I make if I have not conveyed that to them.</i>   |
| Interviewer | <b>What about stakeholders of the IPO? Who would you consider to be the general stakeholders of the IPO?</b>  |
| Respondent  | <i>It would be obviously the agents and their professional representative body, which for patent agents it is CIPA, (Chartered Institute of Patent Agents and for trade mark it is ITMA which is the Institute of Trade Mark Agents, with designs it is probably the Design Council but there are other various design bodies. The ACID, Action on Copying Designs, those kind of areas. There are lots of lobbying groups, there are our own parent department BIS, which are one of our stakeholders, and other arms length BIS bodies such as Companies House, we engage with them as we share some literature that they send out ours, and we often advise and we action do company name tribunals in this office. So we have a closer working relationship with some of the arms length bodies of BIS such as Companies house.</i> |
| Interviewer | <b>Do you have much of a relationship with Ministers?</b>   |
| Respondent  | <i>Not at my level obviously at the IPO Board and directors do, my policy colleagues both in trademarks and policy director obviously have a much more direct relationship with Baroness Wilcox who is our Minister and with other minister previously. When every there is launches, our staff will go along, for example there was a design initiative launch in London last week, Baroness Wilcox was speaking, my design colleagues provided some the briefing material for her, as well as our policy colleagues who would have filled her in on the rest..</i>  |
| Interviewer | <b>Excellent that is great. Are you aware of the objectives of the IPO?</b>   |
| Respondent  | <i>I am yes</i>   |
| Interviewer | <b>And if you are how do you see your role assisting the IPO meeting these objectives?</b>  |
| Respondent  | <i>Obviously in trademarks we work directly on the fee earning part, the revenue generating part of the organisation, so my examiners role to examine trade</i>   |

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|                    | <i>marks to generate revenue for the office, I manage that process. I make sure they have enough cases to deal with, that they have enough time to deal with the cases, make sure that the work gets from our pending file store, through the examiners out into the journal to be published. The sooner the case is registered the better it is for the applicant and the agent concerned. So my role in that is to keep the work flow moving to the cash generation of the office, which is primarily through rights granting of Trade Marks and Patents is done efficiently and smoothly.</i>  |
| <b>Interviewer</b> | <b>Ok, good, so how do you see these objectives impacting on the stakeholders of the IPO?</b>   |
| <b>Respondent</b>  | <i>Well if we can provide a better service for the IPO, for our customer rather in terms of speed, efficiency of service and a good quality product that the grants that they get, sorry that the rights that they get granted are good quality valid products, then it has got to benefit them, it has got to benefit British industry, and British economy anyway, because we do have rivals, we have a European Patent office, a European Trade Mark office, so there are other offices out there that could take our business.</i>  |
| <b>Interviewer</b> | <b>OK, I see right.</b>   |
| <b>Respondent</b>  | <i>So if we do not provide a speedy service where people can get their rights granted quickly, successfully, with a minimum fuss, then it is going to impact as they can take their business elsewhere, and that would be a determinant to the whole of this organisation, but to the UK as a whole.</i>  |
| <b>Interviewer</b> | <b>Ok, fair enough. In summary you are aware of your objectives and how they fit into the IPO fairly clearly ?</b>  |
| <b>Respondent</b>  | <i>I am</i>   |
| <b>Interviewer</b> | <b>What do you think are the challenges and demands that the IPO are facing now and in the future?</b>  |
| <b>Respondent</b>  | <i>Well as I just said we have rivals, so it is open for British business to take their trade mark and patent applications elsewhere. We also have a particular difficulty with the current economic recession. If small business, or small SMEs, you know individual sole traders, if they are not getting support from their banks, if they are not getting money lent, then perhaps intellectual property rights kind of slip down their agenda of things. If we are not getting the business in, then we suffer as a consequence. The UK entrepreneurial sector, the business sector suffers as a whole.</i>  |
| <b>Interviewer</b> | <b>Have you noticed any change or a marked change with this uncertain environment?</b>  |
| <b>Respondent</b>  | <i>Initially from about 2008 after the Lehman brothers collapse, 2008 – 2009 our input dipped however seem to have bucked the trend in the later half of 2010, but certainly in this calendar year in 2011 our trade mark input has gone up to levels before 2008. So somewhere out there someone is finding us, and making trade mark applications, so on average we are now getting, I think it is roughly 20% more cases in than we were. So I think some part of the sector, whether it is more people taking redundancy packages from their jobs and they are starting their own business, may be that is part of the issue, maybe it is part of people realising the assets in their intellectual property are worth protecting and worth guarding, because that in a sense is part of your business armoury.</i> |
| <b>Interviewer</b> | <b>Ok. What about the opportunities that the IPO are facing now and in the future, do you think there are any main opportunities for them?</b>  |
| <b>Respondent</b>  | <i>There could be, we have always had a difficulty in this organisation about, because we are a government body, and a rights granting body we have always shied away from providing advice to people. That has been traditionally the territory of the agents, they advise clients, if we started offering, instead of commercial searches, which is statement of fact you are looking for something similar, if we starting advising people on what makes a good trade mark, what they should be looking for in their business, what they should be trying to register, we would be treading on the toes of agents. That said, about 50% of our trademarks audience if you like, our applicants are unrepresented and they kind of want that kind of advice.</i>  |
| <b>Interviewer</b> | <b>I see.</b>   |
| <b>Respondent</b>  | <i>So it is a potential there that we could tap into that and provide some kind of surgeries for people who want to bring along their designs, trade mark, graphic designs to us, to give you know a preliminary view on, or for us to say to people look to make a trade mark to look in logos, fonts and things and word only might only take you so far, and you might wish to protect your pictures, your logos and things. So there is an opportunity there we also got masses of opportunities to</i>   |

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|                    | <i>look at the digital world, the online stuff, the downloadable stuff. All of that has been a copyright black hole. Of, since the beginning of Napster phenomenon, I tunes, Spotify, all those kind of things you know. A generation of people who are coming through society have little or no expectation of paying for anything, because they can usually find these things free on the web. That obviously has lead to real change in the record industry. There is more that we can do about copyright I think, that would try and enhance the role of copyright protection or downloading material kind of protection that is not currently there at the moment, I see there is a whole gap there that we can look to try and fill with regulation or with some kind of service that we can provide.</i>   |
| <b>Interviewer</b> | <b><i>Excellent, I understand where you are coming from. In terms of these challenges and opportunities that you have said, what do you see as the strengths and weaknesses of the IPO to meet these challenges and weaknesses?</i></b>   |
| <b>Respondent</b>  | <i>Sometimes it is, hand strung by it is still a government body,</i>   |
| <b>Interviewer</b> | <b><i>Can you elaborate on that, what do you mean by that? Why is it hand strung by that?</i></b>   |
| <b>Respondent</b>  | <i>Because of the nature of government, government usually regulates, and maintains and you know has provisions in place to protect individuals against competition law, or insolvency, the government is a rule book really of how you can conduct business, sometimes it is seen as anti free spirit or entrepreneurial, and sometimes we are bound by rules treasury put on use on how we spend the money that we generate, this organisation is a trading fund we generate our own income, but there are often treasury rules to how we spend, we have to have permission to spend it on capital projects like an extension to a building or a new car park, that kind of thing. Sometimes you often have to have permission for investment you want to make into new IT systems. We are having a massive IT system in trademarks we are moving from paper based files, which we had for 150 years to an electronic case management system.</i> |
| <b>Interviewer</b> | <b><i>Big change ?</i></b>  |
| <b>Respondent</b>  | <i>Massive changes. Costing about 10 million pounds. We got the system for free, from the European Trade Mark office, but to adapt it to the UK needs is going to cost about 10 million. So we had to go to the treasury for permission to use our own money, we had the money but just on that kind of capital spend. So I think that the opportunities that the IPO can see are often may have to be drawn back because of the role of the government has to play on regulating business. Not in creating business opportunities for people, that is supposed to happen in the free market we are suppose to regulate that. So I think often treasury, cabinet office often put restrictions on what we can spend our own generated revenue on.</i>   |
| <b>Interviewer</b> | <b><i>What about the strengths of the office to meet these challenges?</i></b>  |
| <b>Respondent</b>  | <i>The office has always been very strong on customer service.</i>  |
| <b>Interviewer</b> | <b><i>OK</i></b>  |
| <b>Respondent</b>  | <i>The office has very loyal staff, Although I think over the last couple of years that loyalty has been tested.</i>  |
| <b>Interviewer</b> | <b><i>Why is that?</i></b>  |
| <b>Respondent</b>  | <i>We had a previous chief executive who took us into a budget crisis in which we had to get rid of 90 staff, in the end it turned out to be 40 vacant posts anyway they got cut and never got filled. But we had to loss 45 staff it was painful, it was awful because those people had to be taken from their jobs, they had to be selected that had to put into a separate room of their own, and spent 6 months looking for a job elsewhere in the government, or services. And that caused a big hole in the heart of the office which it has struggled to recover from.</i>   |
| <b>Interviewer</b> | <b><i>Really</i></b>  |
| <b>Respondent</b>  | <i>Morale is quite low now, I think after that.</i>   |
| <b>Interviewer</b> | <b><i>Right</i></b>   |
| <b>Respondent</b>  | <i>We have got a new chief executive and he is trying his best to sort of repair the damage left by the last one. Who probably would not have now been trusted as far as you could spit at a grand piano?</i>   |
| <b>Interviewer</b> | <b><i>No No</i></b>   |
| <b>Respondent</b>  | <i>But we are trying to build bridges and mend those, those hurt feelings, but by in large the staff are still here, and there is a very low turnover of staff in this office, less than 3%. Which is for the civil service is a very low turn. So people might say that they hate it here, but they don't move on. So I think once people are her, and I think some of the jobs are very interesting, especially the trademarks and patent jobs, people tend to stay.</i>  |
| <b>Interviewer</b> | <b><i>OK</i></b>  |

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| <b>Respondent</b>  | <i>But then you have got a loyal you know bedrock of staff, who will stay and will keep continuing to churn out the cases and perform, and but there are more and more undercurrents of doubt within the staff now I think. May be there is not now the loyalty that there once was. I still think it is one of the offices best strengths though – the staff.</i>  |
| <b>Interviewer</b> | <b>How would you describe then the culture of the IPO?</b>  |
| <b>Respondent</b>  | <i>It certainly when I came to the IPO in the early 1990' s it was very pertriction, it was very the chief executive looked after everyone in that sort of very kind of family way. Generations of have worked, families, especially since it come to South Wales, mothers and children, sisters, brothers, relatives, everyone perceived it as a good place to work, when ever there was a recruitment drive, people would get relatives in, fill in forms and all that kind of stuff. I think it was considered to be a good organisation to work in, they treated you well, they treated you fairly. They still do that, but I think because of the budget crisis of 2009, which eventually turned out not to be much of a crisis by the beginning of 2010 as they thought, forecast. People are regarding it as a less great place to work. We suddenly, I suppose the staff who worked here, were quite naive in thinking the office was doing anything different from other civil service departments, because I am on the, a trade union representative and I have colleagues who work in the DWP and HRMC and they are awful places to work in, in comparison to hear when you hear the stories that they tell. You kind of realise what a paradise this is it is a little oasis, and when it stops being such an oasis staff quite go bitter, you know about it I think. But actually you are treated no less fairly than you ever were. I think some of the realities of the economic situation have crept into the organisation. People are starting to be more conscious of how we are trading as a trading fund, what sort of profit are we making, how much we have to earn to get ourselves through the mire.</i>  |
| <b>Interviewer</b> | <b>Excellent. Good ok. To what extend if any do you think, that the culture of the IPO needs to change to meet all these challenges and demands and opportunities that the IPO have got to face.</b>  |
| <b>Respondent</b>  | <i>I think that the culture of the organisation is changing anyway but probably more in an evolutionary way. Every year things happen and sort or develop our culture. I think people do need to understand the constraints that the board is under. They have got a much more fierce job fighting off the grip of the cabinet office and treasury because of, let's face it this country is broke, isn't it. Of the public sector purse allegedly is empty, the coffers are empty. So the board here have a much harder job I think of try trying to fight of the likes of Francis Maud from the Cabinet office and treasury ministers in, and trying to run the business as they would like it, and I don't think that staff around and about see how much stress and pressure the board there is coming from central government. Umm people will themselves adapt and change, we move into an electronic case management system, people might you know bitch and moan about it, but they will get on with it. But I think there is a lot of bitching and moaning that goes on before any great change and the office, and I don't know what it is, the office never seems to quite get right its change management. It always fails on something. Even if the proposal is a good one the transition from this, sorry from X and Y, it is no good doing a visual thing on this, the transition from X and Y always has a hitch. Sometimes it is about communications, sometimes it is just about people not feeling engaged with the switch from X to Y, and then feeling disgruntled that somehow Y has been forced upon them. When it has not really there has been a process of change a transitional period but something about the office, the way the office manages it never seems to engage people fully. I can't think of a single thing that I have been involved in where there has been a change that has gone entirely smoothly.</i> |
| <b>Interviewer</b> | <b>Fair enough OK. Talking about that sort of change, decision making, communication etc. Feedback. Do you feel that there are adequate links between all parts of the organisation for say decision making?</b>  |
| <b>Respondent</b>  | <i>No. No I don't think</i>   |
| <b>Interviewer</b> | <b>What is stopping that?</b>   |
| <b>Respondent</b>  | <i>I think it is, partly it is the silo mentality, we are all in little different directorates. Some people including myself have only worked in one directorate. Through my union representative role, I do know lots of people in other directorates, so I am a bit more familiar with different parts of the offices, but I know some of my staff, have only worked in trademarks and don't have the faintest idea what goes on in other directorates, and sometimes I think that even extends up as far as some of the senior managers in each directorate and the directors themselves. But they</i>   |

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|                    | <i>sufficiently , they don't socially engage with other directors or other directorates, and that kind of leads to a 'oh something is going on in patents, Oh well that is them isn't it' and no understanding of what has gone on in patents, and how that can impact the office as a whole, and how that can actually impact people in trademarks because something is happening in patents. I think the office is often blocked by its silos, but is often blocked by the sheer volume of stuff we try to undertake. We have got a massive improve program going on at the movement which is spans everything form you know the speed at which you can mop the floor, to the speed at which the director makes a decision about something that affects the directorate. Everything is going to change under this improve program but I think it is so big that most people have switched off, unless you are involved with the program, or any of the individual projects, most people think aw whatever, just tell me at the end.</i> |
| <b>Interviewer</b> | <b><i>Really.</i></b>   |
| <b>Respondent</b>  | <i>And that, the problems is sometimes with senior management, but sometimes it is with staff, that they sufficiently or don't rather sufficiently involved, then they think they are under informed, when in fact that they haven't they have chosen to opt out of listening.</i>  |
| <b>Interviewer</b> | <b><i>So, so in your opinion there is a lot of change, a lot of change programs going on?</i></b>   |
| <b>Respondent</b>  | <i>Absolutely yeah, the whole office is on the move, on the change of this um improve program, we are also going through various processes of lean, you have probably come across that as a methodology. Um it was embraced for the first time last year; we are now on tranche two of lean processes, so we are trying to strip away unnecessary bureaucratic steps, from various transactions that we undertake.</i>  |
| <b>Interviewer</b> | <b><i>With all of this change going on, do you feel that there are adequate links though, between all parts of the organisation, for communication, feedback and change?</i></b>  |
| <b>Respondent</b>  | <i>I'm not, people are trying, we have got a daily news bulletin on are intranet, but they way it is set up is not brilliant. Because if you don't look at it every hour or so, you only need two or three things to be populated into the daily news and the bit at the bottom will sink down out of sight. It can only show you, um at any one time three items of news. So if it is heavy news day, and it can be anything from what is, the menu from the canteen will be one of those things.</i>  |
| <b>Interviewer</b> | <b><i>Oh I see</i></b>  |
| <b>Respondent</b>  | <i>Or tomorrow we have a speaker coming, and all of a sudden the important bit about, oh we are having meeting with John Alty could have slipped out of view. So it is not brilliantly set up, the intranet. Um obviously we have the e-mail channels and people are now making more effort, you often get things in triplicate, you get something on the daily news, you get will get an e-mail from your individual director or section head, tell your staff this and it is often a link to the daily news article, or it will be raise this, this should go on the agenda of your next tea meeting, please read this with your staff. So often I will get three lots of requests to make sure my staff receives the information, so there is no lack of trying to get information out there. I just think that some of our systems are not conducive to ease of access.</i>   |
| <b>Interviewer</b> | <b><i>Right ok</i></b>  |
| <b>Respondent</b>  | <i>We do have SharePoint. Which I have yet to fathom. It is a repository of, well it is the favoured repository of Microsoft product isn't it, famous repository of all documents, but if you ever try to find anything or even go in there, nightmare.</i>   |
| <b>Interviewer</b> | <b><i>So what would you say if you were to make a recommendation, what would be the one or two top tips to improve the links between all parts of the organisation?</i></b>   |
| <b>Respondent</b>  | <i>Um I think a better intranet, um and maybe I know this would not be popular with staff, but at certain points in the day forcing everyone to look at the intranet. Because I am sure there are people in the organisation who can go through entire weeks and never look at what is on the intranet, and often it is the key to getting more information from elsewhere.</i>   |
| <b>Interviewer</b> | <b><i>Yes</i></b>   |
| <b>Respondent</b>  | <i>You probably you know if we did not have all this change process going on with the improve program you could probably get by on just team meetings, and what your colleagues tell you, but ideally the intranet should be the up to date hub of all things going on the office, and it isn't really it is outdated technical architecture means you cannot really support what I would see as a modern communications hub. This is what I think this office needs because there are so many people</i>   |

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|             | <i>tucked away in little silos of their own directorate.</i>   |
| Interviewer | <b><i>But obviously as well as this silo what you are saying as well, there is so much change going on that</i></b>  |
| Respondent  | <i>Yeah</i>  |
| Interviewer | <b><i>Perhaps people lose focus with everything</i></b>  |
| Respondent  | <i>Yeah they don't know whether that, these milestones are to come, they have just happened, what's gone on, what's changed. I mean the most visual things we are undertaking are obviously TM10 for Trademarks which is the electronic case management system, and we have also got an accommodation project called working beyond walls. This is taking people who formerly had cellular single individual offices and making them open plan. This is massive, which is big change for patent examiners because for 150 years they had their own office. So</i>  |
| Interviewer | <b><i>Is that change going well?</i></b>   |
| Respondent  | <i>The pilot areas have just started now, and it has only been a week or a fortnight but already there is a list of people's problems with open plan as long as your arm I think. For those people who have already gone open plan, um it is just a new way of open plan working, with smaller desks with more people in a smaller space. But for those people who have never had open plan working, who have existed in cellular offices, it is a real massive change, physiological as well as physical change. That is exercising most patent examiners minds at the moment, is the move to open plan.</i>  |
| Interviewer | <b><i>Fair enough. Ok. Some really good points there, excellent. Um with all the decision making that goes on, do you feel that you are and you are your team, and other members throughout the organisation are involved with, um the decision making processes, in as such your comments and your teams contributions are readily listened to?</i></b>   |
| Respondent  | <i>If, yes. If my team is asked for comments, and they put them back, I feel that they are taken seriously that they are valid comments and valid opinions. I am in slightly a different position because I am the trade union representative I get to speak to John Alty and the board on a much more regular basis than other managers of my grade. So yes I feel that my personal opinion s are being listened to because I have a platform to air them.</i>  |
| Interviewer | <b><i>Yes. What about other managers, who are not the trade union like you, would they still have the same</i></b>   |
| Respondent  | <i>I think they probably have, they are not disenfranchised that's for sure, they have a voice and I think that senior management would listen to them but generally I am not sure managers in the lower echelons in the B span perhaps are asked for their opinions as much as they could be. Um they usually, you know, they usually participate, everyone is invited to participate in John Alty's live events, or ask the chief executive, um and Sean Dennehey has a patent senior management meeting in which he has um senior managers from his examiner bits but also from his admin bits which would include people from my grade B3/HEO level, so yeah, I think as a whole though managers and staff in the B span get told things but we will be asked for feedback if it effects their particular section. Um and the feedback, I am confident that any feedback given by a manager would be taken seriously and listened to. It might not be acted upon, but I think we have developed. This organisation has pretty much, been very good at taking people seriously and giving people a hearing even if it ultimately does not go with what that individual will says, so I think and part of the values that this organisation has is that you will be listened to, you will be respected, your opinion will be considered valid.</i> |
| Interviewer | <b><i>Yes</i></b>  |
| Respondent  | <i>May not actually be, may not actually be acted upon, but will be listened to.</i>   |
| Interviewer | <b><i>Right ok, fair enough. Umm in your job, in your day to day role are you empowered to be creative, innovative and take risks if you need to, or do you feel that there is so many rules and regulations that it stops you?</i></b>  |
| Respondent  | <i>Um in some respects the later, the rules and regulations, because we work to the trade mark act 1994, which is a piece of statue, but there is very little you can do to deviate from the law.</i>  |
| Interviewer | <b><i>OK.</i></b>  |
| Respondent  | <i>I am also one of three managers who manage trade mark teams, mind solely manage domestic trademarks, I have a colleague who manages a team who, examiners Uk trademarks and international trade marks, and my other colleague manages a team who does domestic trademarks and designs. So if I wanted to be innovative and creative with my team, I have to make sure the other teams</i>   |

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|                    | <i>are on board with it. So I just can't do something with my 16 people because that would be unfair to the other teams of 16 people who actually think , oh yeah that is good we should all do this. So I have to work, because I have other colleagues who manage similar size teams, who have to work more collaboratively, but if I came out with an idea that I suggested to them they would support me, and they would say yes, let's do this let's do it this way. Between the three of us we can, and come up with individual ways or creative ways of doing stuff, but it will be on a much smaller scale, and it can't be anything that deviates from the law.</i>  |
| <b>Interviewer</b> | <b>No I understand that..</b>   |
| <b>Respondent</b>  | <i>So within the management structure, the way of working we can be creative but we cannot change the way in which we examine trademarks, it is the law that governs how we examine trademarks.</i>   |
| <b>Interviewer</b> | <b>And in terms of your management, is that creativity encouraged?</b>  |
| <b>Respondent</b>  | <i>Yes. We have a very supportive um line manager and the next one above that is the director, so the way it sort of pans out, it is historical that we are quite close to the director level, so anything that we come up with that is innovative, and will benefit trademarks as a whole, or director would take seriously and would consider the pros and cons of what we are suggesting.</i>  |
| <b>Interviewer</b> | <b>Yes</b>  |
| <b>Respondent</b>  | <i>As an individual because of the nature in the way our management teams are set up, I can't really do something without recourse to asking others.</i>  |
| <b>Interviewer</b> | <b>Sure I understand that. Excellent ok. Um in your opinion and you sort of answered this somewhat, but I want I want to go over it again, in your opinion does the IPO find it easy to carry out change?</b>   |
| <b>Respondent</b>  | <i>No I don't think it does. It tires, it tries its hardest, but as I say often it fails. Some, the IPO;s worst fault is over the years we have had a number of initiatives, I have, this improve project is at least the fifth that I can name in the 20 years that I have been here, and it all goes off with a big fanfare, launch parties, and balloons and mugs and all the full works, and after a couple of months, things don't get done and sort of dribbles away into nothing. So the offices speciality in the past has been big launch, big fanfare, and then twelve months down the line, it just falls away and a couple of years later you have another big launch and we do something else. You move forward. The work of the office still gets done, so it has not been detrimental in that sense, it is usually every new chief executive brings in his new right we are going to do this, but the tenure of a chief executive is somewhere between 3 and 4 years, so the next chief executive comes along and it has been a couple of years since we have had some sort of thing, so we will do the next big thing. Improve the current program of change we are embarking upon probably will have more legs and will faster and further probably simply because of the number of people employed to move it forward are quite considerable.</i> |
| <b>Interviewer</b> | <b>What are the major things that have held back the change or stopped it happening, what can you, can you put your finger on?</b>  |
| <b>Respondent</b>  | <i>I wonder sometimes if it not the cynicism of the staff, because they think here we go, another one, what is this one called, alright, right we will do this for a bit then and a part of the fault of board or of the particular chief executive who may have failed to engage the staff in carrying this forward. Where we have had projects were we change the way we work, when patents for example moved from paper case files to an electronic case management system, some 5 years ago, it went through successfully but it had, it appointed two project managers who would have dragged their grandmothers through glass to have got this in place and up and running, which they did. So it is sometimes about the personnel having the right people pushing the project forward. Which the office has not always done, worthy people good people, but maybe not people who would have had that ruthless needed to get to the finishing post.</i>   |
| <b>Interviewer</b> | <b>Sure</b>   |
| <b>Respondent</b>  | <i>And sometimes I think the office, is either to ambitious in its end goal or in fact the end goal is so nebulous that how, you have probably reached it in some shape or form but never actually defined what you want to reach, so we have done quite a lot of getting three quarters of the way there, which could in fact been the end of the project, and could have actually been at the end point, if the board had sufficient clarity in the beginning to know when it is going to end. So I think some of the ambitions, which I think the expression, 'which exceeds it's grasp', so the office still rolls on, the office still makes you know, we still rights granting we are still making money. One way or another we seem to stumble</i>   |



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|                    | <i>through more by luck than judgement. And for the big things we have made the change from the transition from paper case files to trade mark electronic case files, we will complete that because the project leader will make sure we do. He is one of these ruthless people who will drive their grandmother through glass to get there.</i>   |
| <b>Interviewer</b> | <b>Fair enough. Where you have had experience, and you can you have had, where the IP O have not been able to change, um has the IPO been able to lean lessons, so the next time they do the same thing, or similar thing they are able to apply those lessons?</b>  |
| <b>Respondent</b>  | <i>Sometimes yeah, sometime, they um, you see the same people involved, and some people it seems to me their entire raise on deter in the office, there entire employment has been employed in some sort of project or another since the time they started. Sometimes you see the same arguments coming through, and you think hang on these sound very familiar, oh this is from the thing we started 3 years ago. Um yes sometimes it does learn its lesson, or sometimes when it starts again it employs a different way of doing something.</i>  |
| <b>Interviewer</b> | <b>Right</b>   |
| <b>Respondent</b>  | <i>May be putting in place, project managers, who are specifically there to project manage rather than people who are doing day jobs, and one of their tasks added on are, oh by the way can you oversee this transition to X form Y.</i>  |
| <b>Interviewer</b> | <b>So do they, do lean in that respect.</b>  |
| <b>Respondent</b>  | <i>Yes I think they have a whole network now of people whose entire role is to get improve from start to finish, we are in tranche two of improve at the mo. So at least we have moved that step forward. Which previously I think they expected people to do it in addition to their day jobs, and that was often part of the problem because people did not commit to the role because they 20 other things that they need to get on with.</i>   |
| <b>Interviewer</b> | <b>Right some good points there. In terms of the strategy and I am going to ask you a few more senior questions since it is progressing really well. Um to what extent to other IP offices strategy have an impact on the UK IPO, are you aware of that?</b>   |
| <b>Respondent</b>  | <i>Well obviously the European patent Office has got the community patent stuff going through its books now, so if you get the community patent there is going to be potentially impact for the UK.</i>  |
| <b>Interviewer</b> | <b>Yes</b>   |
| <b>Respondent</b>  | <i>Our colleagues at OHIM, the European Trade Mark office in Spain, the EU trade mark and design office, if they had a fee reduction for example that makes them more attractive than us, so we have to keep our eyes on their fees, to make sure we are level pegging. For some people they are not going to want to apply to Europe so we are probably always have a bedrock of people who will only trade in the UK, and are happy trading in the UK and just want a UK trade mark registration, but obviously if you are growing your business, you might think of Europe looks a much more attractive option. So we always have to make sure that whatever OHIM are doing whatever EPO are doing, we are either doing the same or we are doing better. Part of what we sell ourselves on in the UK especially in trademarks is that you can reach someone directly with a phone on their desk, speak English and we do things within days, and not within months which is part of the problem with OHIM. It is a typical EU organisation in that it is a bit, if you think the UK civil service is bureaucratic you should try getting anything through OHIM, and you can't often speak to people directly, who are dealing with your case. You write and obviously the postal system in Spain is a bit less great than the one in the UK. There are lots of things that still will hold OHIM back that the UK can do more quickly and more competently</i> |
| <b>Interviewer</b> | <b>Excellent ok. To what extent has the IPO considered what you like the long term impact of current mutual working agreements in their strategy, are you aware of that at all?</b>  |
| <b>Respondent</b>  | <i>Yeah, we have got a lot of umm partnership agreements in place, especially with emerging economies, China, I have lost track over the number of times in the last three the chief executives have gone to the Asian trade mark offices. Japan is a big partner, South Korea and China umm we have signed agreements treaties with them, cooperation treaties, especially with China because of the nature of the Chinese economy and counterfeiting. So we have had to get involved with umm our global parties if you like, to try and prevent piracy and counterfeiting and the sort of thing that damages all economies not just the UK economy but all economies. So yeah we do internationally engage and obviously things like copyright then that, the internet is a global phenomenon the</i>   |

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|                    | <i>downloading thing isn't just a Europe problem. So</i>   |
| <b>Interviewer</b> | <b>Ok. So by in large that benefits the UK IPO then</b>  |
| <b>Respondent</b>  | <i>Yes it does</i>   |
| <b>Interviewer</b> | <b>The benefits shared</b>   |
| <b>Respondent</b>  | <i>Yes the UK IPO still has a reputation, probably from its attrition days as being the granddad of intellectual property rights organisation, so therefore will have umm not a legacy although that is part of it, but a heritage, that's the word, that sounds awful does it, it sound like a vase in a old stately home, but if the UK has that prestige and that kudos as being the heritage organisation, then most other newer trade mark offices will listen to what the IPO has to say. So even if we are not producing an awful a lot through our organisation, our kudos in being a policy maker, a king maker, or an advice giver is quite big in the world.</i>  |
| <b>Interviewer</b> | <b>OK, do you see any downside to that though getting involved with OHIM or the EPO?</b>   |
| <b>Respondent</b>  | <i>Well the danger is I suppose that you give away your best asset which is your heritage and your information and then other people start providing the same or better service than you do and you start losing customers. I think given the area I am talking about is mostly umm in terms of treaties and cooperation's and conventions which are the sort of things done by politicians probably don't impact as much on consumers.</i>  |
| <b>Interviewer</b> | <b>Right</b>   |
| <b>Respondent</b>  | <i>And the overall umm point in principle with doing away with counterfeiting and piracy with benefit consumers in the long run but that is a more distant point, in the short and medium term customers just want to come her get a properly granted right and be confident to use that right to defend there intellectual property in the courts or whatever, so they are not really that worried about what John Alty does in south Korea in talking to the you know the South Korean trade mark office, but for global trade and economies it is important that John Alty talks to the South Korean's about.</i>   |
| <b>Interviewer</b> | <b>Of course, of course. It has been really good, some really good points, if you were to summarise therefore in terms of particularly in terms of the uncertainty in the environment, what sort of, thinking about all the things we have spoken about, what would be the key things that you think that the UK need to really focus upon now to really make sure that they can respond to that uncertainty?</b>  |
| <b>Respondent</b>  | <i>At the moment I think we are in the middle of a, our customer focus has for the last 20 years we have become such a good customer service organisation, but now maybe since perhaps the collapse of Lehman brothers and the whole 2008 recession, our emphasis is now shifting from what we can do for customers in to more what is your intellectual property worth, this has been particularly crystallised with the recent cases of, Nortel telecoms going under in America and I think Apple and Microsoft all banded together bought the company in order to buy there patents for the tele, for the mobile telephony patents that they had 200 of, and I think there is a couple of those cases where a big company have had to sell their intellectual property to stay afloat. So I think our subtle emphasis has moved away from customers protecting intellectual property to actually what is intellectual property worth, and that is what this organisation is coming to sort of realise now, and that is where its emphasis is going. So I think the office needs to crystallise its vision, are we looking to support the customer, are we looking to provide the best customer care, or are we looking at being a global player in trying to tout the worth of intellectual property to people.</i> |
| <b>Interviewer</b> | <b>Right</b>   |
| <b>Respondent</b>  | <i>I mean there are lots of things about the intellectual property market which is unpalatable, and some of it is possibly unethical.</i>  |
| <b>Interviewer</b> | <b>Mmm</b>   |
| <b>Respondent</b>  | <i>We are talking about capitalism here aren't we,</i>   |
| <b>Interviewer</b> | <b>Yes</b>   |
| <b>Respondent</b>  | <i>That the big guy with all the money and the deep pockets and the lawyers will generally 99 times out of 100 will beat the small guy. The small guy is then going to get disillusioned</i>   |
| <b>Interviewer</b> | <b>Yes</b>   |
| <b>Respondent</b>  | <i>Either with patents or trademarks or all of it and just think, I am not contributing the UK economy, I am just opting out. Where previously perhaps our focus being on the customer, would make him feel valued, make him feel worth while his custom would be worthwhile to the office and to the economy. I think the office is at a cross roads now, in an ideal world we would do all of it.</i>  |

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| <b>Interviewer</b> | <b>Yes</b>   |
| <b>Respondent</b>  | <i>But I don't think we can. I think the office tends to move either down one path or another, and I think at the moment we are at this cross roads where the customer service thing is still there it is still very big in the office, but now we are moving towards the value and the worth and the monetary areas that intellectual property could grow.</i>  |
| <b>Interviewer</b> | <b>Ok do you think people in the office generally think that the IP world is a bit uncertain at the moment?</b>  |
| <b>Respondent</b>  | <i>Possibly not because of the growth in um the trade mark input that we seem to have</i>  |
| <b>Interviewer</b> | <b>Right</b>   |
| <b>Respondent</b>  | <i>This appears to be bucking the trend for the recession and the economy. Patents have a four year backlog, they have enough work to keep them going for a long long time, and they talking about, even though we have got a recruitment freeze on, making a special exception for patent examiners. So we could be having new staff coming on board. So I think within the office the general staff might actually see the IPO was doing ok</i>  |
| <b>Interviewer</b> | <b>Ok</b>  |
| <b>Respondent</b>  | <i>In the current environment, despite the ,you know global economic collapse. That said we are on the brink of a double dip aren't we, this is the second time in the doldrums may things will change in the next 6 months. Some people will feel more insecure. People probably feel more insecure about what central government are doing, in terms of the pension cuts, the civil service compensation scheme cuts and that the wholesale way that the current government seem to be saying public sector bad, private sector good.</i>  |
| <b>Interviewer</b> | <b>Mmm</b>   |
| <b>Respondent</b>  | <i>People are uncertain about that generally, I don't think they are uncertain about how the IPO is handling it all, and how the IPO business model is going. They seem to be more uncertain about whether Francis Moore says actually regardless about how good you are doing as an organisation, we need to cut the civil service in half. You must get rid of X staff.</i>  |
| <b>Interviewer</b> | <b>Right</b>   |
| <b>Respondent</b>  | <i>And I don't think with the best will in the world, John Alty can do much about requests from Francis Moore to say get rid of half your staff. So it is that uncertainty from central government which worries staff as opposed to he worry about the IPO not making enough money or the IPO going through an economic malaise.</i>  |
| <b>Interviewer</b> | <b>If you were summing up again that you think that one perhaps one big thing that you would like to see happen in the office to respond to what is going on.</b>  |
| <b>Respondent</b>  | <i>I would like to see the IPO although it is part of government department, I would like to see it stand up on its own two feet. We make our own money, we generate our own income it would be nice to have control of our own destiny. I feel that would reassure the staff, reassure me. Um I think the office does need to focus on what it is about the intellectual property world it is trying to get a grip on. Is its role going to be a global policy maker or a global policy maker, or is it that we are just going to concentrate on being the best rights granting organisation in the western hemisphere at least, so I think the office has an awful lot of these things at its finger tips, it is just which way is it going to achieve this, throw the ball.</i> |
| <b>Interviewer</b> | <b>On that note I would just like to thank you, and it has been a really productive interview. Thank you very much.</b>  |
| <b>Respondent</b>  | <i>You are very welcome.</i>   |
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|                    | <b>THE END</b>   |

## Appendix 3:

### Correspondence with the IPO

Mr. J. Alty  
Chief Executive  
UK IPO  
Concept House  
Cardiff Road  
Newport City  
NP10 8QQ

The researcher's home  
address has been  
suppressed for  
confidentiality purposes

10th June 2010

Dear Sir,

Re: Doctoral Research

As part of the part time Doctoral programme that I am undertaking at the University of Glamorgan, I am currently undertaking research surrounding organisational strategy, using Complex Adaptive System (CAS) theory as the theoretical framework.

This research builds upon my MBA dissertation conducted at the IPO in 2009; which focused on facilitating open-ended strategic fees change at the IPO, using CAS behaviours. This resulted in the successful completion of the MBA with distinction.

I have chosen this area for research, primarily through my ongoing relationship with the Office, due to my previous role as Project Accountant for the then Patent Office Fees Review, conducted in 2003/04, and my continued interest in the complex and turbulent IP world. This experience at the IPO has proved beneficial in my current role as Strategic Accountant at the Ministry of defence.

As part of the research process, I will have to complete primary research, and initially more general research, and therefore I am seeking approval, as granted by your predecessor, that I can carry on this process, using the IPO as a case study. As such any information obtained from the result of this study, would be for the sole purpose of this research, and would be subject to the ethics and confidentiality rules laid down for academic research of this nature.

If you require any further information regarding this research, I shall be happy to discuss with you what I hope to achieve from this study, together with the findings from my previous study.

Yours faithfully

Alan Sully



From the Chief Executive and  
Comptroller-General

The Researcher's home  
address has been  
suppressed for  
confidentiality purposes.

Direct line: +44 (0)1633 814500  
Email: [John.Altly@ipo.gov.uk](mailto:John.Altly@ipo.gov.uk)  
Our ref:  
Your ref:  
Date 21 June 2010

*Dear Alan*

Many thanks for your letter of 10 June regarding your request to use the IPO as a case study for your Doctoral research.

I have no objections to you speaking with members of staff from the IPO if this is convenient to them and I suggest that you contact my assistant, Maria Ciavatta (01633 814796 e-mail [maria.ciavatta@ipo.gov.uk](mailto:maria.ciavatta@ipo.gov.uk)) who can organize this for you.

*I would be interested in seeing the results  
ide!*

JOHN ALTLY

*John*

*John Altly*